

# **Making Sense of One Health Cooperating at the Human-Animal- Ecosystem Health Interface**

**Aline Leboeuf**

**April 2011**

**Health and Environment Reports n° 7**



The Institut français des relations internationales (Ifri) is a research center and a forum for debate on major international political and economic issues.

Headed by Thierry de Montbrial since its founding in 1979, Ifri is a non-governmental and a non-profit organization.

As an independent think tank, Ifri sets its own research agenda, publishing its findings regularly for a global audience.

Using an interdisciplinary approach, Ifri brings together political and economic decision-makers, researchers and internationally renowned experts to animate its debate and research activities.

With offices in Paris and Brussels, Ifri stands out as one of the rare French think tanks to have positioned itself at the very heart of European debate.

*The opinions expressed in this text  
are the responsibility of the author alone.*

ISBN: 978-2-86592-869-9

© All rights reserved, Ifri, 2011

**Ifri**

27, rue de la Procession  
75740 Paris Cedex 15 – France  
Tel: +33 (0)1 40 61 60 00  
Email: [ifri@ifri.org](mailto:ifri@ifri.org)

**Ifri-Bruxelles**

Rue Marie-Thérèse, 21  
1000 Brussels – Belgium  
Tel: +32 (0)2 238 51 10  
Email: [info.bruxelles@ifri.org](mailto:info.bruxelles@ifri.org)

Internet Website: [Ifri.org](http://Ifri.org)

# THE HEALTH & ENVIRONMENT REPORTS

The “Health and Environment: from Safety and Security Issues to New Governance Options?” programme of Ifri seeks to elucidate the linkages that can exist between health and environmental issues and security considerations, and to analyse the impacts of such linkages in terms of efficiency and of the governance options available to international actors. The programme also wishes to stimulate a wider debate within the global civil society and bring to the fore innovative perspectives on these issues, through the linking together of practitioners within a dedicated network.

As part of the Health and Environment programme of Ifri, a minimum of three case-studies on global health and environmental issues are published each year: the *Health & Environment Reports*. All reports have an empirical, comparative and policy-oriented approach, and comprise:

- An empirical analysis of the health and/ or environmental issue under study;
- A prospective analysis of the future developments of the issue under study;
- Policy-oriented recommendations.

*The Health and Environment programme of Ifri is supported  
by the Taipei Representative Office in France.*

## **Editorial Board:**

Editor: Aline LEBOEUF

Deputy Editor: Emma BROUGHTON

Layout assistant: Amira KORKOR



# EXECUTIVE SUMMARY

This study aims at showing and making sense of the One Health approach. It also attempts to illustrate how One Health emerges on the international scene. In doing so, I explain that through the One Health approach, a new form of global governance takes form.

To make the meaning of One Health more clear, I start by showing its three faces. The first face is comprised of the actors that make up One Health: international organisations, grassroots movements (i.e., researchers and NGOs), and states. In this section, I show how One Health has emerged. This has happened through conferences and networks that spread the approach, with help from the political will of some key actors like the EU and the United States, and also thanks to the cooperative efforts between international organizations that allow us to see One Health in action.

In the second section, I examine the wide variety of meanings attributed to One Health in order to clarify the debates and the different visions on which it is structured. For example, I demonstrate that there is no unanimity regarding the diseases concerned by One Health, i.e., whether One Health's strengthening of human and animal health systems concerns zoonoses only, or includes more widely prevalent diseases like cancer. I also try to explain that if several names can be used (One Medicine, One World One Health, One Health), they cover a similar reality. Such clarifications of the meaning or meanings of One Health do not challenge the objectives of the approach, which acts, in fact, as an umbrella for different but complementary conceptions.

Lastly, the third face of One Health is its implementation and prospects for further development. I cite the history of One Health and establish the importance of cooperation, the strengthening of human and animal health systems, education and research, and communication.

I conclude the study by reaffirming that even if there is no agreement on its definition, One Health remains an important approach that serves as an umbrella for practices that improve animal and human health. Those practices need to be developed, even if there is a risk that funding and cooperation issues arise and make them more difficult to implement.

Finally, I propose to analyse One Health as a case of “soft” global governance of health. It works through peer influence and pressure rather than through the pressure of the law or of sanctions. It is a light footprint mobilisation system. In contrast with the case of HIV/AIDS, no new institution has been created. The strength of this form of governance comes from consensus and the shared interest by the actors involved in One Health, but also from the legitimacy brought by the support of the states (as, for example, through the Hanoi Declaration). The diversity of involved actors ensures a form of resilience at the local level. But at the global level, governance remains very fragile, to the point that if some key actors stop supporting it, One Health risks being set aside in favour of other concepts or approaches.

# CONTENTS

<b>ABBREVIATIONS .....</b>	<b>5</b>
<b>INTRODUCTION .....</b>	<b>8</b>
The quest for a definition and the roots of the approach .....	9
Why does One Health matter? .....	10
The three faces of One Health .....	15
Methodology .....	15
<b>THE “CORE” OF ONE HEALTH: THE ACTORS .....</b>	<b>18</b>
<b>AT THE LEVEL OF INTERNATIONAL ORGANIZATIONS, A GROUP WITH VARYING COMPOSITION, THE ALLIANCE .....</b>	<b>19</b>
Building upon the avian influenza global framework.....	19
The first circle: a technical triangle (FAO, OIE, WHO) .....	20
The second circle: the World Bank and the funding issue.....	25
The quasi third circle: .....	26
The fourth circle .....	28
<b>AT THE GRASSROOTS LEVEL OF RESEARCH, ACADEMIC AND PROFESSIONAL INSTITUTIONS AND NETWORKS .....</b>	<b>29</b>
<b>THE STATE LEVEL: THE BLOCKS ON WHICH TO BUILD THE APPROACH .....</b>	<b>34</b>
A growing engagement to support OH at the global level: the ministerial conferences .....	35
Innovations at the national level in support of OH.....	36
<b>VARIATIONS IN MEANING .....</b>	<b>43</b>
Different concepts, closely bound visions .....	43

Working beyond professional barriers: which barriers? .....	45
Which diseases? Only emerging infectious diseases? .....	46
<b>IMPLEMENTING ONE HEALTH.....</b>	<b>51</b>
History of the approach .....	52
Improving coordination for a truly comprehensive approach.....	53
Strengthening health systems.....	57
Education & Research .....	59
Communication .....	62
<b>CONCLUSION .....</b>	<b>64</b>
The emergence of an umbrella approach .....	64
No definition but a meaningful concept.....	65
A consensual and important approach.....	65
Funding and cooperation as the key issues.....	66
OH: a soft global health governance.....	67
<b>ANNEX 1: INTERVIEWEES .....</b>	<b>69</b>
<b>ANNEX 2: QUESTIONNAIRE.....</b>	<b>71</b>
<b>ANNEX 3: THE MANHATTAN PRINCIPLES ON “ONE WORLD, ONE HEALTH™” .....</b>	<b>73</b>



## ABBREVIATIONS

AI	Avian Influenza
ALive	Partnership and multi-stakeholder platform for African Livestock Development
AMA	American Medical Association
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
AVMA	American Veterinary Medical Association
BSE	Bovine Spongiform Encephalopathy
CDC	Centers for Disease Control and Prevention
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
FMD	Foot-and-Mouth Disease

FVE	Federation of Veterinarians of Europe
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
HPA	Health Protection Agency (UK)
HPAI	highly pathogenic avian influenza
H5N1	sub-type of influenza virus (H5 haemagglutinin, N1 neuraminidase)
IFAD	International Fund for Agricultural Development
IHR	International Health Regulations (WHO)
INAP	Integrated National Action Plan
IO	Intergovernmental Organisation
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
OH	One Health
OIE	World Organization 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
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
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNDPI	United Nations Department of Public Information
UNESCO	United Nations Educational, Scientific, and Cultural Organization.
UNEP	United Nations Environment Programme
UNICEF	United Nations Children’s Fund
UNSIC	Office of the United Nations System Influenza Coordinator
US	United States
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WAHID	OIE World Animal Health Information Database
WCS	Wildlife Conservation Society
WHO	World Health Organization
WHO/AFRO	World Health Organization Regional Office for Africa
WTO	World Trade Organization
WWF	World Wildlife Fund

# INTRODUCTION

Since the promotion of the “One World One Health™” concept during a conference of the Wildlife Conservation Society in 2004, the world of global health has seen the slow emergence of a consensus around the “One Health” approach. This approach is key to building the momentum needed to defeat emerging and reemerging diseases (such as Ebola, rabies, highly pathogenic avian influenza, etc.) at the interface between human, animal and ecosystem health. It supports and legitimates improved cooperation between animal, public and environmental health. It also gives rise to a new call for the strengthening of animal and human health systems, without which diseases cannot be controlled or defeated. Finally, One Health builds on a global governance model that is worth studying: it has emerged from the global response to avian influenza,<sup>1</sup> and is a flexible governance model that does not require the creation of new norms or new institutions, but mobilizes existing resources as smoothly as possible to respond to emerging issues. Only one institution was created for HPAI – UNSIC (Office of the United Nations System Influenza Coordinator) – and it has been a small, flexible coordination structure with little implementation power. This development of this model is in contrast to the HIV/AIDS model, which resulted in the creation of UNAIDS and the Global Fund against HIV/AIDS, tuberculosis and malaria, and which caused cooperation issues between the UN agencies involved in the fight against HIV/AIDS.

Even with all those qualities, the One Health approach remains little known outside of specialist sectors and institutions concerned with infectious diseases and especially zoonoses (any disease or infection that is naturally transmissible from vertebrate animals to humans).<sup>2</sup> It is a specialized approach that makes sense for its supporters and gives new meaning to their whereabouts but remains difficult to apprehend from

---

<sup>1</sup> Aline Leboeuf, “The Global Fight Against Avian Influenza. Lessons for the Management of Health and Environmental Crises”, *Health and Environment Reports*, n° 2, <[http://www.ifri.org/?page=detail-contribution&id=5261&id\\_provenance=103&provenance\\_context\\_id=13](http://www.ifri.org/?page=detail-contribution&id=5261&id_provenance=103&provenance_context_id=13)>, last accessed 21 December 2010.

<sup>2</sup> WHO, “Zoonoses”, <<http://www.who.int/topics/zoonoses/en/>>, last accessed 11 February 2011.

the “outside” for the general public.<sup>3</sup> Even within the Global Health arena, the One Health approach is little known. This paper therefore proposes to render One Health, this new object of global relations, accessible to even novice readers and in the process, as well as put forward an ambitious and comprehensive vision of what I call “the three faces” of One Health.

### **THE QUEST FOR A DEFINITION AND THE ROOTS OF THE APPROACH**

There is no generally accepted definition of One Health.<sup>4</sup> One definition, used by the American Veterinary Medical Association (AVMA), FAO, OIE, WHO, UNSIC, UNICEF, and The World Bank in their “Strategic Framework” on One Health was published in 2008. They write that One Health is:

*the collaborative efforts of multiple disciplines working locally, nationally and globally to attain optimal health for people, animals and our environment*<sup>5</sup>

However, this definition has not been unanimously accepted, as some consider that it is too broad (since it includes environment health)<sup>6</sup>. Furthermore, within the small survey carried out for this research, the 16 interviewees each offered different definitions of One Health,<sup>7</sup> but none seemed to be inspired by the AVMA one.

<sup>3</sup> All persons we had a discussion with about One Health and who were neither veterinarians nor public health specialists had never heard of “One Health”.

<sup>4</sup> Interview with X, veterinarian, OIE, 30 November 2010 and Alain Vandersmissen, veterinarian, European Commission, 10 December 2010.

<sup>5</sup> American Veterinary Medical Association, “One Health: A New Professional Imperative: Final Report of the One Health Initiative Task Force”, 2008, p. 13, <[www.avma.org/onehealth](http://www.avma.org/onehealth)>, last accessed 6 December 2010. Quoted in: 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-Ecosystems Interface”, Consultation Document, 14 October 2008, p. 9. The One Health Initiative gives the same definition except it adds “optimal health for [...] plants”, <<http://www.onehealthinitiative.com/about.php>>, last accessed 9 December 2010.

<sup>6</sup> Comment from a peer-reviewer.

<sup>7</sup> When asked what One Health means for them, interviewees all gave different answers. Here are four of them: “[One Health] involves dealing with health problem, their livestock and other domestic and wild animals they depend on through the development of integrated ‘control packages’ that adress several disease/health problems”; “Operationalizing intersectoral collaboration for managing risks and other issues that arises from the complex interaction of humans and animals with their environment.”; “Collaboration of human and veterinary medicine to understand, prevent and treat zoonoses”; “The concept evolved from the “One medicine” concept (Schwabe) where the livestock and human environment are included to consider the systemic approach. It involves transdisciplinary approach in tackling complex health issues in hard to reach or marginalized population, where resources are scarce

Nevertheless, some consensus did seem to emerge among the 16 as most of their definitions did imply either multi-sectoral cooperation, or cooperation between human and animal health. Furthermore, all interviewees but one agreed that One Health (OH) means both “better cooperation between physicians and veterinarians” and “working at the interaction [interface] between human and animal health and the ecosystem.” The consensus had a limit though, as 3 to 4 interviewees disagreed that OH meant “a new approach to global health governance”. Those two dimensions (cooperation between human and animal health and work at the human-animal-ecosystems interface) could then be considered the core, or *the two roots*, of One Health.

However, this vision *a minima*, those common roots, do not suffice to make sense of One Health but can be used as *our definition of One Health* for this report. The absence of a generally accepted definition is not necessarily a problem, as the lack of a common definition does not prevent One Health from playing the role of an *umbrella*. It is indeed shared by many different actors with slightly different visions but who can work together because they share the same framework, the same approach, the same *umbrella*. In this way, the “One Health umbrella” federates people.<sup>8</sup>

Before I examine the different faces of this umbrella, it is important to first explain why One Health is an important approach for the control of infectious diseases, among other things.

## ***WHY DOES ONE HEALTH MATTER?***

To really understand the importance of One Health, one needs to comprehend the impact of emerging infectious diseases and the importance of preventing and controlling them, as well as how One Health can contribute to the prevention and control of such diseases.

## **The need to control and prevent infectious diseases**

Emerging and reemerging infectious diseases are a large burden one should try to prevent and control. According to some estimates, there are one million vertebrate

---

or lacking and where one single discipline or sector could not overcome the health problem. The concept is not reductionist but generates added value in health system.”

<sup>8</sup> Interview with Alain Vandersmissen, European Commission, 10 December 2010.

viruses of which only 2000 are known: this represents a “large potential for zoonotic emergence.”<sup>9</sup> A few figures help us to imagine what infectious diseases imply for the life of millions of human beings every year. According to WHO, “in 2005 alone 1.8 million people died from food-born diarrheal diseases” like E-coli or Salmonellosis.<sup>10</sup> Even less known is that “more than 55,000 people die of rabies each year.”<sup>11</sup> Finally, an estimated 2 to 8% of the 1.6 million annual human deaths from tuberculosis are from bovine origin.<sup>12</sup>

Furthermore, because of climate change or other drivers of emergence<sup>13</sup>, old and new diseases can emerge in regions where they were before unheard of. In France, for example, where, for the first time last September, one indigenous dengue case and two indigenous chikungunya cases were discovered.<sup>14</sup>

Diseases do have an impact on the economy, and their economic burden can be calculated, even if the methodologies and the results vary and can be heavily debated.<sup>15</sup> For example, Jean Kamanzi from the World Bank estimates that SARS would have cost \$50 billion<sup>16</sup>; foot and mouth (FMD) in the UK \$30 billion<sup>17</sup>, FMD in

<sup>9</sup> Ronald Atlas, Carol Rubin, Stanley Maloy, Peter Daszak, Rita Colwell, Barbara Hyde, “One Health – Attaining Optimal Health for People, Animals, and the Environment”, *Microbe magazine*, November 2010, <<http://www.microbemagazine.org/index.php/09-2010-home/2760-one-health-attaining-optimal-health-for-people-animals-and-the-environment>>, accessed November 19, 2010.

<sup>10</sup> Ronald Atlas, *op. cit.*.

<sup>11</sup> “Rabies”, *Fact Sheet*, n° 99, <<http://www.who.int/mediacentre/factsheets/fs099/en/>>, accessed 09 February 2010.

<sup>12</sup> The World Bank, *op. cit.*.

<sup>13</sup> The factors that could worsen the situation include climate change, increased population, encroachment on natural forest, etc. See 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-Ecosystems Interface”, Consultation Document, 14 October 2008, pp. 16-17; A. A. Aguirre and G. M. Tabor, “Global Factors Driving Emerging Infectious Diseases”, *Annals of the New York Academy of Sciences*, n° 1149, 2008, pp. 1-3; Shuman, E., “Global climate change and infectious diseases”, *New England Journal of Medicine*, vol. 362, n° 12, 2010, pp. 1061–3; A. Cascio, M. Bosilkovski, A. J. Rodriguez-Morales and G. Pappas, “The socio-ecology of zoonotic infections”, *Clinical Microbiology and Infection*, vol. 17, n° 3, 2011, pp. 336–342; K. E. Jones, N. G. Patel, et al., “Global trends in emerging infectious diseases”, *Nature*, n° 451, 21 February 2008, pp. 990-993.

<sup>14</sup> Claire Peltier, “Le chikungunya s’installe en France métropolitaine”, <[http://www.futura-sciences.com/fr/news/t/medecine/d/le-chikungunya-sinstalle-en-france-metropolitaine\\_25326/](http://www.futura-sciences.com/fr/news/t/medecine/d/le-chikungunya-sinstalle-en-france-metropolitaine_25326/)>, last accessed 21 December 2010.

<sup>15</sup> S. Burgos and J. Otte, “Managing the Risk of Emerging Diseases: From Rhetoric to Action”, *HPAI Research Brief*, n° 22, 2010; M. J. Otte, R. Nugent, A. McLeod, “Transboundary Animal Diseases: Assessment of socio-economic impacts and institutional responses”, *Livestock Production Policy Paper*, n° 9, <[http://collection.europarchive.org/tna/20060731065549/http://www.fao.org/ag/againfo/resources/en/publications/sector\\_discuss/PP\\_Nr9\\_Final.pdf](http://collection.europarchive.org/tna/20060731065549/http://www.fao.org/ag/againfo/resources/en/publications/sector_discuss/PP_Nr9_Final.pdf)>, last accessed 17 February 2010.

<sup>16</sup> Other estimations for SARS mention 30 million and 10.6 to 15 million dollars for the damage to the Asian region. A. T. Proce-Smith and Y. Huang, “SARS and the Political Economy of Contagion”, in

Taiwan, \$5-8 billion; BSE in the UK \$10-13 billion; and Nipah virus in Malaysia \$350-400 million.<sup>18</sup> In another estimation, economists consider that:

*The emergence of BSE, SARS, H5N1, and influenza A(H1N1) have caused over US\$20 billion in direct economic losses over the last decade and much more that US\$200 billion in indirect losses.*<sup>19</sup>

Once the importance of infectious diseases is ascertained,<sup>20</sup> the question becomes, what are the options for preventing and controlling them? The One Health approach does provide some solutions.

## One Health's contribution to the control and prevention of diseases

One Health has the potential to help switch “[f]rom emergency activities to more strategic approaches”<sup>21</sup>; it can help the population to “live – again – with [infectious] uncertainty.”<sup>22</sup> To highlight OH's possible contribution to the control and prevention of

Andrew Fenton Cooper, John J. Kirton, *Innovations in Global Governance*, Ashgate Publishing, 2009, p. 30. See also M. R. Keogh-Brown, R. D. Smith, “The economic impact of SARS: How does the reality match the predictions?”, *Health Policy*, n° 88, 2008, pp. 110–120. They showed that “the economic impact of SARS was not as catastrophic as anticipated by contemporary estimates and models, or envisaged by the media at the time of the outbreak” (p. 118).

<sup>17</sup> Another article propose a much more moderate estimation of the cost of FMD in the UK: “In 2001, a fall of £7.7 billion in tourism expenditure has the effect of reducing GDP by £2.0 billion. When agricultural effects are also included, the fall in GDP attributable to the FMD crisis is £3.6 billion.” A. Blake, M. Thea Sinclair, G. Sugiyarto, “Quantifying the impact of foot and mouth disease on tourism and the UK economy”, *Tourism Economics*, vol 9, n° 4, 2003, p. 459.

“Quantifying the impact of foot and mouth disease on tourism and the UK economy.”

<sup>18</sup> On Nipah virus, “The costs to the Malaysian economy associated with the destruction of pigs, the closure of farms, the loss of trade of pigs, and the decrease in consumption of pork was estimated to be US\$350 million, and the additional cost to the government from subsidies, revenue loss, and controlling the outbreak was estimated to be in the vicinity of US\$275 million.” Kim Halpin, Alexander D. Hyatt, Raina K. Plowright, “Emerging Viruses: Coming in on a Wrinkled Wing and a Prayer”, *Clinical Infectious Diseases*, n° 44, 2007, pp. 715.

Quote from: Jean Kamanzi (Banque Mondiale, Agriculture and Rural Development), “Why should we invest in One Health?”, CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, “Operationalizing ‘One Health’: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 4-6 May 2010.

<sup>19</sup> The World Bank, *op. cit.*, p. x.

<sup>20</sup> One could add to this importance the risk of bioterrorism use of pathogens.

<sup>21</sup> United Nations, The World Bank, *Animal and Pandemic Influenza, A Framework for Sustaining Momentum*, Fifth Global Progress Report, July 2010, p. 102.

<sup>22</sup> Alain Vandersmissen, “One Health”: From a Classical Concept to a Modern Dynamics for Global Co-operation”, CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, “Operationalizing ‘One Health’: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 4-6 May 2010. Opening speech of EU, IMCAPI Hanoi 2010 and Hanoi Declaration April 2010.



diseases, it is important to understand a few recent outbreaks where thinking at the animal-human-ecosystem interface was either lacking or proved incredibly helpful.

In 1999, a new encephalitis epidemic emerged in New York that affected humans. It was thought to be St. Louis encephalitis until a veterinarian from the Bronx zoo insisted that native birds were also dying: it had to be West Nile virus, a virus until then unheard of in North America. Had the public health officials and veterinarians worked closer, sooner, an effort to control the mosquito vector may have prevented the virus from overwintering and spreading.<sup>23</sup> During 2010, as of December 14<sup>th</sup>, there were 979 cases and 43 deaths due to the virus in the USA.<sup>24</sup>

De facto, animals can be used as sentinels: several human outbreaks of zoonotic diseases can be forecast by their incidence in animals. The deaths of wild and captive birds leading up to the West Nile human outbreaks, for example, or the deaths of apes in the Congo forest, which may signal a coming Ebola epidemic.<sup>25</sup> By recommending increased cooperation between animal and human health systems, One Health makes it more likely that such connections will be made in a timely manner.

In 2003, an epidemic of 71 cases of monkeypox was reported by the CDC in the Midwestern United States. At the time there was a widespread fear of a smallpox outbreak. However, the threat was only monkeypox, a similar but more lenient disease. All cases were traced back to imported West African rodents and then native prairie dogs located at the same premises who had first contracted the illness. As a result, the outbreak was controlled and importation of West African rodents and interstate movement of prairie dogs was banned.<sup>26</sup>

The complex road from the animal to the human has to be examined in many other outbreaks of emerging diseases if prevention and control options are to be developed. In the case of SARS it was first thought that the virus reservoir was the civet cat, until the discovery that horseshoe bats were the real hosts.<sup>27</sup> In the case of the Nipah

<sup>23</sup> E.P.J. Gibbs, "Emerging zoonotic epidemics in the interconnected global community", *The Veterinary Record*, n° 157, 26 November 2005, pp. 674-675; Claudia Kalb, "Animal Instincts", *Newsweek*, 27 April 2010, <[www.newsweek.com/2010/04/27/animal-instincts.print.html](http://www.newsweek.com/2010/04/27/animal-instincts.print.html)>.

<sup>24</sup> <[http://www.cdc.gov/NCIDOD/dvbid/westnile/surv&controlCaseCount10\\_detailed.htm](http://www.cdc.gov/NCIDOD/dvbid/westnile/surv&controlCaseCount10_detailed.htm)>, last accessed 21 December 2010.

<sup>25</sup> Thomas P. Monath, "One Medicine/One Health": Personal Reflections of a True Believer", <<http://www.onehealthinitiative.com/publications/ONE%20Health%20ICEID%20Mar08Final%20tpm.pdf>>, last accessed 16 December 2010.

<sup>26</sup> E.P.J. Gibbs, *op. cit.*, pp. 676-677.

<sup>27</sup> 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-Ecosystems Interface", Consultation Document, 14 October 2008, p. 16; The World Bank, *op. cit.*, p. 14.

virus, a virus first detected in Malaysia in 1998, pigs were originally thought to be the hosts, however they turned out to be merely intermediary hosts, the actual hosts being fruit bats.<sup>28</sup> The Hendra virus in Australia is another example of spill-over from wildlife reservoir to livestock: starting in September 1994, the virus killed both horses (39 before February 2009) and human beings (6) and the reservoir hosts were also found to be fruit bats, as for the Nipah virus.<sup>29</sup>

Other more well-know diseases, when they reemerge, require robust cooperation between public health and animal health services, or else they prove harder to control. This was the case of the bovine spongiform encephalopathy (BSE) (or Variant Creutzfeldt-Jakob disease (vCJD)) and is now the case with Q-fever in the Netherlands.<sup>30</sup> Rabies is another example, with a recent outbreak in New York City where, in January 2010, 39 rabid raccoons posed a danger for visitors to Central park.<sup>31</sup>

Finally, as One Health supports the improvement of health systems, it implies that concrete resources will be allocated to human and animal health systems and therefore empower them to defeat old and reemerging diseases, zoonoses or otherwise, that may have strong human and or economic impacts. This is the case, for example, of foot and mouth disease (FMD),<sup>32</sup> which proved economically disastrous in the UK in 2001.<sup>33</sup>

---

<sup>28</sup> FAO, OIE, WHO, UNSIC, UNICEF, The World Bank, *op. cit.*, p. 16; WHO, "Nipah Virus (NiV) Infection", <<http://www.who.int/csr/disease/nipah/en/index.html>>, last accessed 22 December 2010.

<sup>29</sup> S.J. Prowse, N. Perkins, H. Field, "Strategies for enhancing Australia's capacity to respond to emerging infectious diseases", *Veterinaria Italiana*, vol. 45, n° 1, pp. 69-72. J. S. Mackenzie, H. E. Field and K. J. Guyatt, "Managing emerging diseases borne by fruit bats (flying foxes), with particular reference to henipaviruses and Australian bat lyssavirus", *Journal of Applied Microbiology*, vol. 94, n° Supplement s1, May 2003, pp. 59-69; Kim Halpin, Alexander D. Hyatt, Raina K. Plowright, "Emerging Viruses: Coming in on a Wrinkled Wing and a Prayer", *Clinical Infectious Diseases*, n° 44, 2007, pp. 711-7.

<sup>30</sup> W. van der Hoek, F. Dijkstra, B. Schimmer, et al., "Rapid communications. Q fever in the Netherlands: an update on the epidemiology and control measures", *Eurosurveillance*, vol. 15, n° 12, 25 March 2010, <<http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19520>>, last accessed 21 December 2010.

<sup>31</sup> Andy Newman, "City Now Vaccinating Raccoons for Rabies", *New York Times*, 16 February 2010, <<http://cityroom.blogs.nytimes.com/2010/02/16/city-now-vaccinating-raccoons-for-rabies/>>, last accessed 21 December 2010.

<sup>32</sup> FAO, OIE, WHO, UNSIC, UNICEF, The World Bank, *op. cit.*, p. 16.

<sup>33</sup> BBC, "FMD report: Outbreak's economic impact", 29 August 2001, <[http://news.bbc.co.uk/2/hi/uk\\_news/1515327.stm](http://news.bbc.co.uk/2/hi/uk_news/1515327.stm)>, last accessed 21 December 2010; A. Blake, M. Thea Sinclair, G. Sugiyarto, *op. cit.*

## **THE THREE FACES OF ONE HEALTH**

There is no clear cut definition of One Health, but I can try to define it through three steps: first by describing the actors involved in One Health (“who does what” says a lot about “what is what”), secondly by delimitating the frontiers of One Health (what is the minimum versus maximum interpretation of One Health), and thirdly by underlining how the approach is being implemented. Each chapter of this report will therefore focus on one of these three faces of One Health.

By targeting the three faces of One Health, I will show how a new global health concept emerges and takes hold thanks to the mobilisation of a wide variety of actors. I will also demonstrate how a retooled governance model takes root and provides international actors with a way to deal with emerging diseases via a softer, more flexible path that favours cooperation rather than the creation of new institutions, in contrast with the HIV/AIDS model.

## **METHODOLOGY**

One Health is a recent approach whose emergence can at times be best captured by embedded observation and thorough interviews with its champions than through the exploitation of the literature devoted to it. I however tried to get hold of it by way of several paths.

First, this research builds upon earlier research conducted on the global fight against avian influenza in 2008-2009, and for which I interviewed 50 people in Europe (Rome, Geneva, Brussels, Paris), Indonesia and the United States.<sup>34</sup> Thanks to those interviews, I had the chance to meet several key actors and get a first vision of One Health. I remained in contact with two of those “insiders”, one at OIE and one at the European Commission, who have extensive knowledge of One Health as it was developed by political stakeholders (national and regional) and international organisations.<sup>35</sup> I interviewed them again for this report.

I also had the chance to participate in the “One World One Health™” expert conference organised in Winnipeg, Canada in March 2009 by the Public Health

---

<sup>34</sup> Aline Leboeuf, “The Global Fight Against Avian Influenza. Lessons for the Management of Health and Environmental Crises”, *Health and Environment Reports*, n° 2, <[http://www.ifri.org/?page=detail-contribution&id=5261&id\\_provenance=103&provenance\\_context\\_id=13](http://www.ifri.org/?page=detail-contribution&id=5261&id_provenance=103&provenance_context_id=13)>, last accessed 21 December 2010.

<sup>35</sup> X, OIE, 30 November 2010; Alain Vandersmissen, European Commission, 10 December 2010.

Agency of Canada.<sup>36</sup> With another conference organised by the CDC in Georgia in May 2010, it is one of the only two high-level One Health conferences that allowed state representatives, international organisations, and experts from the academic or NGO worlds to discuss and propose concrete solutions for the implementation or the operationalisation of One Health. This participant observation allowed me to see how One Health was being negotiated between international organisations (especially FAO, OIE and WHO), states (Canada, US, especially through CDC), and grassroots organisations (World Conservations Society, food safety organisations, researchers and academics, etc.). I met other “insiders” and could discuss One Health and their different visions with them. Embedded in this environment, I could start to better understand who the key actors were, how they negotiated, and what issues were at stake.

For my research on avian influenza, I was highly dependent on the discourse of the very same decision-makers who had led the fight against avian influenza. However, for this report on One Health, I wanted to open the spectrum and give a voice to actors I had not yet managed to take into account. The solution I found was to send a questionnaire to a wider range of individuals. The idea of the questionnaire was, above all, to test the width of the consensus on One Health, and furthermore, to assess the opinions of One Health held by individuals from the animal and public health systems. It also helped me lend more importance to grassroots movements.

The survey consists of a questionnaire sent to about 150 people working in human and animal health on avian influenza or zoonoses and likely to be interested by One Health. I received 16 filled-out questionnaires in response (slightly more than 10%, which is usually considered satisfactory for this kind of survey)<sup>37</sup>. It is important to note that all interviewees were veterinarians, with or without public health experience: this is the main bias of this survey, but it may also show that veterinarians feel truly concerned by One Health. All but one considered One Health “an important approach.”

Most interviewees were researchers (9). Three were from international or regional organisations: one from USDA/OIE, one from PAHO/WHO, and one from the EU. Two were from government: one from the French Foreign Affairs Department, and one from the Swiss Federal Veterinary Office. One was from the private poultry sector and one from the Wildlife Conservation Society (WCS). Four interviewees were based in Africa, one in South America, two in the USA, and nine in Western Europe.

---

<sup>36</sup> <<http://www.phac-aspc.gc.ca/publicat/2009/er-rc/pdf/er-rc-eng.pdf>>, last accessed 11 February 2011.

<sup>37</sup> The list of interviewees can be found in Annex 1.

Of course, the survey cannot be used as an authoritative source, representative of the vision of One Health worldwide or even among veterinarians. However, used as a qualitative survey (as interviewees often commented on the questions), it offers interesting results on some specific visions of One Health including those of at least three authors who have already published on OH. Above all, as it completes the literature review, the interviews,<sup>38</sup> and the participant observation in Winnipeg, the survey is a fair source of information about One Health that is called upon several times in this report.

To complete this process, the draft version of the report was peer-reviewed, both from a distance (I received comments through email and telephone) and through a peer-review workshop organised on the 9<sup>th</sup> of February 2011 at Ifri in Paris. There were 9 contributing experts,<sup>39</sup> and their comments allowed me to refine my vision of One Health as well as the report.<sup>40</sup>

Finally, the report should be seen as a *vision* of One Health produced by a witness, and therefore limited in its scope. I tried to remain neutral when faced with different perceptions and expectations of One Health, but could not avoid at times taking position in favour of One Health and of some specific positions debated within the approach, such as the resistance to the creation of a new institution. Nonetheless, I hope that I presented One Health in an objective manner that will allow those unfamiliar with the approach to understand it and those familiar, to reown it.

This report is published in the framework of the French Institute of International Relations' Health and Environment programme. This programme aims at uncovering the developments and transformations of health and environment global governance.

---

<sup>38</sup> Three interviews were also conducted with questionnaire responders: Agnès Poirier, French Ministry of Foreign Affairs; David Swayne, USDA and OIE; Maria Vang Johansen, Professor in Parasitic Zoonoses, University of Copenhagen.

<sup>39</sup> Mary-Laure Beauvais, French Ministry of Agriculture; Bonfoh Bassirou, Managing Director, Centre Suisse de Recherche Scientifique en Côte d'Ivoire, Abidjan; Sigfrido Burgos, FAO; Christophe Paquet, French Development Agency; Agnès Poirier, French Ministry of Foreign and European Affairs; Jimmy Smith; World Bank; Natacha Tolstoï, French Ministry of Foreign and European Affairs; Alain Vandersmissen, Coordinator of the External Response of the European Commission to the Avian Influenza Crisis; Maria Vang Johansen, Professor in Parasitic Zoonoses, Faculty of Life Sciences, University of Copenhagen; X, OIE.

<sup>40</sup> I would like to thank all the individuals who contributed to this report, whether through interviews, by responding to the questionnaire, or through the peer-review process, as well as the Ifri team who contributed to the improvement of this report, Emma Broughton, research assistant, Thomas Bernard, intern and Amira Korkor, assistant.

## THE “CORE” OF ONE HEALTH: THE ACTORS

One way to approach One Health (OH) is through the depiction of the actors that own and frame it. This is what I will call the “first face of One Health”. To understand the wide variety of actors who govern OH, its governance so to say, one can use the image of a three-level game, with three groups of actors having similar importance but playing different and complementary roles. At the first level, the centre, one finds a group of *international organisations* with a flexible composition: they give OH its global leadership. At the second level grow the *networks of researchers and non-governmental organisations* that irrigate OH with analysis, visions, and expertise, and contribute to its spread and development. At the third level, the key blocks on which OH builds up are the *states* (and regional organisations) some of which were very active in providing political leadership to One Health (like the United States and the Europeans Union). By taking position in favour of implementing OH, the states give the approach its legitimacy.

At the three levels, the role of given individuals is crucial. They invest in One Health, cooperate among themselves, and promote the approach as it serves their personal, institutional, and professional interests or ideals. This network of individual champions are the strongest point of the One Health approach but also its main weakness as the promotion of One Health requires the renewal of this network with the recruitment of new individual promoters.<sup>41</sup> This is why whether One Health is supported by existing institutions or states rather than by individuals only is so crucial. Only the institutionalisation of One Health can give it depth and longevity

---

<sup>41</sup> The role of individuals in One Health is one of the issue that emerged from the peer-review of this report.

## AT THE LEVEL OF INTERNATIONAL ORGANIZATIONS, A GROUP WITH VARYING COMPOSITION, THE ALLIANCE

An alliance of a few international organizations (FAO, OIE, WHO, World Bank, UNSIC, UNICEF, etc.) has mobilised to develop One Health. In doing so they have tried to build upon the global governance that emerged throughout the fight against avian influenza. The very cooperation between those international organizations (IO) can itself be seen as a way to implement OH. The alliance, aside from its core centre, remains very flexible and shifting as inner alliances within the main group battle to redefine or displace OH.

### ***BUILDING UPON THE AVIAN INFLUENZA GLOBAL FRAMEWORK***

To understand the One Health alliance, one needs to consider the highly pathogenic avian influenza global governance. Indeed, one of the aims behind the promotion of One Health is to reproduce the institutional global framework and the partnerships developed to deal with highly pathogenic avian influenza – however, with a broader scope: <sup>42</sup> “Shifting the paradigm: broadening the avian and pandemic influenza response”. <sup>43</sup> The avian influenza global governance represented a form of oligopoly between FAO, OIE, WHO, UNICEF, UNSIC and the World Bank that played a central role in the fight. OH, as seen by those organisations, could reproduce more or less this oligopoly.

Furthermore, one key idea promoted by OH, as seen by those organisations, is the importance of building OH with the organisations that already exist, rather than establish a separate entity. The key text on OH as seen by the six organisations of the oligopoly (cf. Infra) is “Contributing to One World, One Health-A Strategic Framework for Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystem Interface” and dates back to 2008. According to this text it is crucial to:

*Buil[d] on existing institutions and their unique strengths.*

*The Strategic Framework will build on the existing approaches and mandates of international institutions*

---

<sup>42</sup> The World Bank, *op. cit.*, p. xii.

<sup>43</sup> FAO, OIE, WHO, UNSIC, UNICEF, The World Bank, *op. cit.*, p. 38.



*and other partners to form a flexible network, which is expected to be nimble enough to be able to adapt, form new coalitions and respond rapidly to any new health emergencies. Internationally, these would include building on a number of structures and mechanisms that have been already established by the specialized international agencies such as FAO, OIE, WHO and UNICEF (...). The framework does not see the integration or fusion of roles among different specialized international agencies; rather it seeks improved communication, coordination and collaboration.<sup>44</sup>*

Even if the six organisations reached a consensus in drafting this document in 2008, since then their positions have evolved and even at times have diverged. The oligopoly model or alliance or “interagency strategic framework”<sup>45</sup> remains very unstable and necessitates constant negotiation. However fragile it is, it remains at the core of the One Health approach as it incarnates it at the global level. I will now look at the four circles that currently form the OH alliance.

### **THE FIRST CIRCLE: A TECHNICAL TRIANGLE (FAO, OIE, WHO)**

The first circle of the Alliance, its centre, is composed of the FAO/OIE/WHO triangle. The FAO (Food and Agriculture Organization), OIE (World Animal Health Organization), and WHO (World Health Organization) form a triangle of key stakeholders of One Health. Their cooperation, an old one, epitomises One Health through series of cooperation mechanisms and declarations. However, their relations are not settled. Rather, they are always moving and shifting, with some bilateral relations stronger at times than others, but the exact state of the relationships remaining difficult to establish due precisely to the lack of uniformity among the organisations (a team or an individual within the OIE may have closer relations with FAO while another will feel closer to the WHO)<sup>46</sup>.

---

<sup>44</sup> FAO, OIE, WHO, UNSIC, UNICEF, The World Bank, *op. cit.*, p. 23.

<sup>45</sup> Alain Vandersmissen, “One Health’: From a Classical Concept to a Modern Dynamics for Global Co-operation”, CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, “Operationalizing ‘One Health’: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 4-6 May 2010.

<sup>46</sup> According to an interviewee, while the FAO and OIE had a strong alliance until 2009, the relationship between WHO and OIE would now be stronger since the end of the A(H1N1)2009 crisis.



## Long standing cooperation

There has been a long history of cooperation between FAO, the OIE, and the WHO, anterior to the current level of interest in OH, but some would say that it was already moving towards the OH approach despite the fact that it didn't yet have a name. Already in 1975, FAO, the OIE, and the WHO published:

*a joint report on The Veterinary Contribution to Public Health Practice, which established veterinary public health (VPH) as an area of cooperation among the three organizations that year later would become an important facilitator in formulating an international response to avian flu.*<sup>47</sup>

*Furthermore, between the OIE and the WHO, one can trace long-standing cooperation dating back to 1961, the 14<sup>th</sup> World Health Assembly (exchange of letters): a collaboration that then took the form of an official agreement approved by the 57<sup>th</sup> World Health Assembly (2004).<sup>48</sup> The agreement mentions that both organisations shall cooperate to exchange information on "zoonotic or/and foodborne diseases of recognized or potential international public health importance" and for the "Joint elaboration, advocacy and technical support to national, regional or global programmes for the control or elimination of major zoonotic and foodborne diseases or emerging/reemerging issues of common interest."*<sup>49</sup>

## A series of cooperation mechanisms

Despite this history of cooperation, the core cooperation mechanisms between the three organisations are quite recent. This series of mechanisms makes One Health happen on an everyday and lasting basis.

---

<sup>47</sup> The World Bank, *op. cit.*, p. 13.

<sup>48</sup> Agreement Between The World Health Organization And The Office International Des Épidémiologies, Adopted by the WHO and by the OIE on 16 December 2004, <<http://www.oie.int/en/about-us/key-texts/cooperation-agreements/agreement-with-the-world-health-organization-who/>>, last accessed 9 February 2011; WHO, "Accords avec des organisations intergouvernementales. Collaboration entre l'OMS et l'Office international des Epizooties. Rapport du secrétariat", 63th World Health Assembly, A63/46, Point 18.3, 22 April 2010, p. 1.

<sup>49</sup> Annex 2, "Text of amended Agreement between the Office International des Epizooties and the World Health Organisation", A63/46 – 22 April 2010, article 4.1 and 4.3, In: 63rd World Health Assembly, "Resolutions and decisions. Annexes.", WHA63/2010/REC/1, Geneva, 17-21 May 2010.

OFFLU: the OIE and FAO joint network of expertise on animal influenzas. Two of its objectives include: “[t]o exchange scientific data and biological materials (including virus strains) within the network, to analyse such data, and to share such information with the wider scientific community” and “[t]o collaborate with the WHO influenza network on issues relating to the animal-human interface, including early preparation of human vaccine.”<sup>50</sup>

GLEWS: the Global Early Warning and Response System for Major Animal Diseases, including Zoonoses (GLEWS) was created in July 2007 as a common FAO/OIE/WHO platform, and whose “overall aim [...] is to improve the early warning and response capacity to animal disease threats of the three sister organizations for the benefit of the international community.”<sup>51</sup>

The FAO/OIE Crisis Management Centre (CMC-AH) was launched in 2006 to “respond rapidly to transboundary animal disease and emerging infectious diseases crises.”<sup>52</sup>

Created one year after the avian influenza emergency started, by FAO and the OIE, the Global Framework for Progressive Control of Transboundary Animal Diseases (GT-TADS), is a tool to confront existing and emergent infectious diseases.<sup>53</sup>

The Codex Alimentarius Commission was created in 1963 by FAO and the WHO to develop food standards, guidelines and related texts such as codes of practice under the Joint FAO/WHO Food Standards Programme. The main purposes of this Programme are protecting health of the consumers, ensuring fair trade practices in the food trade, and promoting coordination of all food standards work undertaken by international governmental and non-governmental organizations.<sup>54</sup>

FAO and WHO also created the International Food Safety Authorities Network (INFOSAN) which “alerts national focal point on the occurrence of regional or global concerns for a food safety event.”<sup>55</sup>

---

<sup>50</sup> OIE/FAO Network of expertise on animal influenzas: <<http://www.offlu.net/index.html>>, last accessed 9 February 2011.

<sup>51</sup> GLEWS Agreement available at: <[http://www.oie.int/fileadmin/Home/eng/About\\_us/docs/pdf/GLEWS\\_Tripartite-Finalversion010206.pdf](http://www.oie.int/fileadmin/Home/eng/About_us/docs/pdf/GLEWS_Tripartite-Finalversion010206.pdf)> . See also: <http://www.glews.net>, last accessed February 9, 2011.

<sup>52</sup> <<http://www.fao.org/emergencies/home0/emergency-relief-and-rehabilitation/cmc/en/>>, last accessed February 9, 2011.

<sup>53</sup> <[http://www.oie.int/fileadmin/Home/eng/About\\_us/docs/pdf/GF-TADs\\_approved\\_version24May2004.pdf](http://www.oie.int/fileadmin/Home/eng/About_us/docs/pdf/GF-TADs_approved_version24May2004.pdf)>, last accessed 9 February 2011.

<sup>54</sup> <[http://www.codexalimentarius.net/web/index\\_fr.jsp](http://www.codexalimentarius.net/web/index_fr.jsp)> last accessed 9 February 2011.

<sup>55</sup> <[http://www.who.int/foodsafety/fs\\_management/infosan/en/](http://www.who.int/foodsafety/fs_management/infosan/en/)>, last accessed 9 February 2011.

FAO and OIE have set up RAHCS (Regional Animal Health Centres):

*that provide member countries with technical support and evaluated national and regional projects, supported when necessary by FAO and OIE networks of expertise to further advance international standards, provide guidance and promote capacity building.*<sup>56</sup>

There is also an OIE Working Group on Animal Production Food Safety to which FAO, WHO and Codex representatives contribute.<sup>57</sup>

Finally, two instruments allow the three organizations to prevent and control diseases: WHO's Global Outbreak Alert and Response Network (GOARN)<sup>58</sup> and the OIE's WAHIS/WAHID (World Animal Health Information System and Database) that includes wildlife diseases.<sup>59</sup>

Those formal mechanisms are also completed by thematic collaborations at the global and local levels,<sup>60</sup> and meetings such as the annual coordination meetings between FAO/OIE/WHO (most recently in February 2011)<sup>61</sup>.

## Few formal declarations in favour of OH

There are few official documents that mark the support of the three organisations for One Health. Two documents constitute a real breakthrough. The first was published in October 2008, during the Sharm el-Sheikh Interministerial conference on Avian and pandemic influenza (IMCAPI). It was signed by what I called the avian influenza oligopoly: FAO, the OIE, UNICEF, UNSIC, the WHO, and the World Bank, and it was called "Contributing to One World, One Health, A Strategic Framework for Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystems Interface." The Strategic Framework represents the best consensus that could be reached between the six organisations.

*The second document was published before the Hanoi IMCAPI of April 2010. It was signed only by the triangle – FAO, the OIE and the WHO – and its title is "The FAO-OIE-WHO Collaboration: Sharing responsibilities and coordinating global activities at the animal-human-*

<sup>56</sup> FAO, OIE, OMS, *The FAO-OIE-WHO Collaboration...*, op. cit., p. 14.

<sup>57</sup> <[http://www.oie.int/eng/secu\\_sanitaire/en\\_introduction.htm](http://www.oie.int/eng/secu_sanitaire/en_introduction.htm)>, last accessed 9 February 2011.

<sup>58</sup> <<http://www.who.int/csr/outbreaknetwork/en/>>, last accessed 9 February 2011.

<sup>59</sup> <<http://www.oie.int/wahis/public.php?page=home>>, last accessed 9 February 2011.

<sup>60</sup> See for example "Executive Summary, FAO-OIE Collaboration", sent to the author by a peer-reviewer.

<sup>61</sup> Communication from a peer-reviewer.

*ecosystems interfaces: A Tripartite Concept Note.” The note is only six pages long. It is not as centered on the One Health approach as the Framework, and it mentions “One Health” (rather than One World One Health™) only once: “This tripartite note envisages complementary work to develop normative standards and field programmes to achieve One Health goals.”<sup>62</sup>*

The three organisations seem to prefer to insist on concrete cooperation and coordination that on a concept that may seem a bit “evasive”. The same caution in the use of the One Health concept can be found on the organisations’ websites.

The OIE is the organisation that refers the most openly to One Health, with an editorial from the Director General on “One World One Health” published in the second OIE bulletin of 2009 with a summary of the “Framework”.<sup>63</sup> Furthermore, in May 2010 OIE members adopted the Fifth Strategic Plan of the OIE, “which sets a roadmap for OIE global missions over the years 2011-2015. New fields of action include [...] more focus on the ‘One Health’ concept.”<sup>64</sup>

One Health appears only once on the WHO website, on the “Neglected zoonotic disease” page.<sup>65</sup> On the FAO website, I found a press communiqué on the “One Health initiative,” a page dedicated to “Thoughts of FAO on ‘One Health’,”<sup>66</sup> and an article in the *One Health Newsletter* by two officers from FAO.<sup>67</sup>

I then tried to find references to One Health in more official documents pertaining to the WHO, like the World Assembly Report. However, it proved difficult to find references to One Health in the World Health Assembly reports, excepting one report by the Secretariat from November 27<sup>th</sup>, 2008, that mentions “One World One Health™” and according to which:

*There is now an acceptance that, in order to maintain the momentum in the response to H5N1 infection and increased preparedness for a pandemic of influenza,*

---

<sup>62</sup> FAO, OIE, OMS, *The FAO-OIE-WHO Collaboration...*, *op. cit.*

<sup>63</sup> “One World, One Health”, *OIE Bulletin*, n° 2, 2009, p. 1-7.

<sup>64</sup> *ResearchMediaLtd*, “Dr Bernard Vallat, Director General of the World Organisation for Animal Health”, 24 August 2010, <<http://www.research-europe.com/index.php/2010/08/dr-bernard-vallat-director-general-of-the-world-organisation-for-animal-health/>>, last accessed 4 January 2010.

<sup>65</sup> <[http://www.who.int/neglected\\_diseases/zoonoses/en/](http://www.who.int/neglected_diseases/zoonoses/en/)>, last accessed 23 December 2010.

<sup>66</sup> <[http://www.fao.org/ag/againfo/home/en/news\\_archive/2010\\_one-health.html](http://www.fao.org/ag/againfo/home/en/news_archive/2010_one-health.html)>, last accessed 17 February 2011.

<sup>67</sup> FAO Media Centre, “Improved disease prevention in animal health could save billions of dollars, One Health approach to more efficiently combat new pathogens is gaining strength”, 26 July 2010, <<http://www.fao.org/news/story/en/item/44327/icode/>>, last accessed 23 December 2010; Sigfrido Burgos, J. Slingenbergh, “FAO in One Health: Business Unusual”, *One Health Newsletter*, vol. 3, n° 4, pp. 17-19.

*there should be a framework to enable a response to diseases at the human-animal interface, which includes human public health, and domestic and wildlife animal health using the concept of "One World, One Health" from the Wildlife Conservation Society 2004. A strategic framework [...] will be presented to (...) Sharm-el-Sheikh.*<sup>68</sup>

I gather from this limited visibility of one health, that it remains a rather technical issue, not a wide audience issue, and that the three organisations, except maybe the OIE, preferred to continue to cooperate as efficiently as possible without feeling an urge to sell the One Health approach too vocally. Controlling and limiting the communication on One Health was also a good way to ensure that only the most consensual communications, limited in numbers, could be used as reference documents.

## ***THE SECOND CIRCLE: THE WORLD BANK AND THE FUNDING ISSUE***

A fourth player needs to be added to this triangle. The World Bank is difficult to fully exclude from the "alliance". The World Bank really pushes to "implement" One Health, that is, to transform it into a workable concept that can allow for fundraising. It is also the organization that invested the most heavily in framing One Health into a coherent and developed discourse, thanks to its own report on "People, Pathogens and Our Planet" in 2010, which provided content for the last UNSIC/ World Bank report (2010) on avian and human influenza.<sup>69</sup>

The issue of designated funding was underlined as one of the crucial points for One Health by the Stone Mountain meeting,<sup>70</sup> an expert meeting on One Health that took place in May 2010. The World Bank is used to raising funds and proposes clear figures for One Health fundraising. According to Jean Kamanzi from the World Bank, \$2.7 billion were disbursed for avian and human influenza from 2005 to 2009. It may

---

<sup>68</sup> WHO Executive Board, 124<sup>th</sup> Session, Provisional agenda item 4.1, "Pandemic influenza preparedness: sharing of influenza viruses and access to vaccines and other benefits. Report by the Secretariat." EB124/4, 27 November 2008, § 14.

<sup>69</sup> The World Bank (Agriculture and Rural Development. Health, Nutrition and Population), *People, Pathogens and Our Planet. Volume 1: Towards a One Health Approach for Controlling Zoonotic Diseases*, Report n° 50833-GLB, 2010; United Nations, The World Bank, *Animal and Pandemic Influenza, A Framework for Sustaining Momentum*, Fifth Global Progress Report, July 2010.

<sup>70</sup> CDC, "Operationalizing 'One Health'. A brief overview of the Stone Mountain meeting", *op. cit.*, p. 2.

be possible to raise \$1.3 billion a year over 12 years (\$16 billion) or the equivalent of 0.5% of the impact of severe pandemic flu (\$3 trillion).<sup>71</sup>

However, the World Bank is also seen with caution by the three other organisations. Some fear that the World Bank interprets OH as a tool to redefine the role of animal and public health, and worse, the World Bank is said to aim to fuse health and veterinary services, despite their denials thereof.<sup>72</sup> Such a fear, whether concerning the World Bank or not, could explain the editorial of Bernard Vallat, the Director General of the OIE, who writes:

*[T]he concept 'One World, One Health' should not serve as a pretext for dangerous initiatives like trying to achieve economies of scale based on purely theoretical notions worthy of a sorcerer's apprentice, such as trying to merge the Veterinary Services and the Public Health Services.*<sup>73</sup>

The issue of the merging of health and animal services is a tense one, which damages the image of the World Bank. However, with its habit of raising funds, and with its will to remain involved in One Health, the World Bank proves an actor difficult to set aside and will certainly remain important in the governance of One Health.

### **THE QUASI THIRD CIRCLE:**

If there is an OH "first circle" (FAO, the OIE, the WHO) and "second circle" (the World Bank), there is also a "quasi" third circle, composed of organisations which stay at the margins of the One Health oligopoly because they belonged to the avian influenza global governance oligopoly (UNSIC and UNICEF) or are being slowly integrated to the alliance (such as UNEP and UNDP).

UNSIC is still writing the annual global progress reports on avian influenza with the World Bank, which now include a part on One Health. And it is possible to imagine that it will evolve from an avian influenza focus to a One Health focus, retaining its coordination role. However David Nabarro, the head of UNSIC, while he played a leading role in the initial promotion of the One Health concept<sup>74</sup>, seems less involved

<sup>71</sup> Jean Kamanzi (Banque Mondiale, Agriculture and Rural Development), "Why should we invest in One Health?", *op. cit.*

<sup>72</sup> This fear was expressed in one interview. One of the peer-reviewer insisted that the World Bank has no such project.

<sup>73</sup> B. Vallat, editorial, "One World, One Health", *OIE Bulletin*, n° 2, 2009, p. 2.

<sup>74</sup> Interview with Alain Vandersmissen, European Commission, 10 December 2010.



in UNSIC as he used to be. Indeed in January 2009, he became the UN system coordinator for Global Food Security Crisis and in October, he was appointed Special Representative of the UN Secretary General for Food Security and Nutrition.<sup>75</sup> The future of UNSIC remains therefore quite unclear.

UNICEF was represented at the Stone Mountain meeting of One Health experts in 2010 (see *infra*) and proposed to “support the creation of a neutral [portal website], without making it a UNICEF branded website”.<sup>76</sup> However UNICEF does not seem to be playing a central role in One Health, compared to OIE/FAO/WHO/the World Bank. Its presence ensures that communication remains an issue for One Health but as long as UNICEF does not receive specific funding for One Health projects, it is not very likely to hold a more active role.

UNSIIC and UNICEF are in a way “the relics of the avian influenza governance”, and they continue to play a role, but one that is less central, less visible, and less clear than it was during the fight against avian influenza. Their role may depend a lot on future funding from external donors, while FAO/OIE/WHO and the World Bank have already contributed to One Health thanks to funding they raised for the fight against avian influenza<sup>77</sup> or to support their cooperation activities<sup>78</sup>. Furthermore, while it is FAO/OIE/WHO's core business to prevent and control diseases, UNICEF and UNSIC may have more difficulty legitimizing their contribution to One Health, so their exact role towards One Health global governance is variable and more difficult to stabilize.

Lastly, UNEP is getting closer and closer to becoming a partner in this alliance (its legitimacy arises, for example, from its Convention on Migratory Species). With UNDP it would slowly replace UNICEF in the alliance.<sup>79</sup>

---

<sup>75</sup> David Nabarro, <<http://un-foodsecurity.org/node/49>>, last accessed 23 December 2010.

<sup>76</sup> CDC, “Operationalizing “One Health”, A brief overview of the Stone Mountain meeting”, *op. cit.*, p. 5.

<sup>77</sup> The AHIF, Avian and Human Influenza Fund, was recently steered towards One Health projects. <<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTAVIANFLU/0,,contentMDK:21355695~pagePK:210058~piPK:210062~theSitePK:3124441,00.html>>, last accessed 23 December 2010; one example is the creation of One Health hubs: United Nations, The World Bank, *op. cit.*, p. 96.

<sup>78</sup> The OIE has for example created in 2004 a Global Trust Fund, the OIE World Animal Health and Welfare Fund, to finance its programmes in support of veterinary services and of the implementation of OIE standards. Alain Dehove, “OIE International Solidarity: General Overview. Need for better Veterinary Governance”, Second Global Conference of OIE Reference, Laboratories and Collaborating Centres, Paris, 21-23 June 2010, <[http://www.oie.int/eng/A\\_VETO\\_PARIS\\_2010/Abstract/Session%207/Session\\_7\\_1\\_Alain\\_Debove.pdf](http://www.oie.int/eng/A_VETO_PARIS_2010/Abstract/Session%207/Session_7_1_Alain_Debove.pdf)>, last accessed 23 December 2010.

<sup>79</sup> According to two testimonies gathered during the peer-review process.

## **THE FOURTH CIRCLE**

A fourth circle of international organisation can be drawn: those organisations that could but do not play a role in One Health yet. One has to note that new forms of cooperation seem to be emerging between the FAO/OIE/WHO triangle and other organisations that could lead to new partnerships and new alliances.<sup>80</sup>

Indeed, UNESCO and the OIE are currently negotiating an agreement covering biodiversity, the environment, and more specifically, veterinary education.<sup>81</sup> UNESCO is a leading international organisation in the global governance of biodiversity.<sup>82</sup>

Furthermore, the Convention of Biodiversity (CBD), the International Plant Protection Convention (IPPC), and the World Trade Organisation (WTO) all contributed to the International Portal on Food Safety, Animal and Plant Health<sup>83</sup> with FAO, the OIE and the WHO. As a global standards setting organisation referred to in the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (like the OIE and the Codex Alimentarius), the IPPC has an expertise that can be seen as complementary to those of the three other organisations. Hence, a rapprochement between those organisations would not be surprising and would certainly support One Health, especially if One Health is seen as also implying plant health (see *infra*). The CBD could also contribute, with its future Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services in particular, to offer a complementary expertise on ecosystem health. Having the WTO involved is also important, as an example like the monkeypox in the USA showed the negative role that the trade of animals could have on the emergence of diseases and highlighted the importance of controlling such trade flows.<sup>84</sup>

---

<sup>80</sup> S. Burgos and J. Otte, "Animal Health in the 21st Century: Challenges and Opportunities", *Pro-Poor Livestock Policy Initiative. A Living from Livestock. Research Report*, n° 09-06, December 2009.

<sup>81</sup> Comment from a peer-reviewer. This partnership was officially announced during the Official Opening Ceremony of the World Veterinary Year in Versailles (France), on 24 January 2011.

<sup>82</sup> Mireille Jardin, Raphaël Billé et al., "Global Governance of Biodiversity: New Perspectives on a Shared Challenge", *Health and Environment Reports*, n° 6, December 2010, <[http://www.ifri.org/?page=detail-contribution&id=6368&id\\_provenance=88&provenance\\_context\\_id=13](http://www.ifri.org/?page=detail-contribution&id=6368&id_provenance=88&provenance_context_id=13)>, last accessed 5 January 2011; <<http://www.unesco.org/new/fr/unesco/>>, last accessed 11 February 2011.

<sup>83</sup> <<http://www.ipfsaph.org/En/default.jsp>>, last accessed 23 December 2010.

<sup>84</sup> Other organisations and conventions could also be involved, like the World Heritage Convention (WHC), the Convention on Wetlands of International Importance (Ramsar Convention), the UNESCO World Network of Biosphere Reserves, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS).



Flexible partnerships can then model the alliance and result in varying configurations in support of One Health. However, IOs are not the only actors in One Health. Grassroots movements and states also play a key role.

## **AT THE GRASSROOTS LEVEL OF RESEARCH, ACADEMIC AND PROFESSIONAL INSTITUTIONS AND NETWORKS**

A number of individuals and organisations, especially, but not limited to, professional organisations, contributed to creating a sort of One Health “fashion” or “buzz”. In order to do so, they used publications and conferences or meetings, which allowed them to own and above all to promote One Health. It worked, seeing as how researchers from countries like Nigeria and Bangladesh also positioned themselves in favour of One Health and contributed to promote One Health in their countries and abroad. I propose here a description of some of those grassroots attempts to promote One Health.

A unique meeting marks one of the possible origins of One Health. In July 2001, a gathering of the Society for Tropical Veterinary Medicine and the Wildlife Disease Association resulted in a joint resolution, the Pilanesberg Resolution: “calling for recognition by the international donor community of animal health sciences as critical to the design and management of sustainable wildlife and/or livestock- based programs,”<sup>85</sup> and encouraging multi-sector approaches (taking into account wildlife and livestock and other elements). The two organisations also resolved to work together. Here we see the ingredients of the One Health grassroots success: professional organisations agreeing to cooperate following a meeting that helped them discover their common interests in promoting animal and human health. Two future champions of “One World, One Health™”, William Karesh and Steven Osofsky from the Wildlife Conservation Society (WCS), can be found among the signatories of an article highlighting the importance of this resolution in 2002.

Then, “[i]n September 2004, WCS convened health experts from around the world to discuss the movements of diseases among human, domestic animal, and wildlife populations”.<sup>86</sup> The event was called “One World, One Health: Building

<sup>85</sup> Willima B. Karesh, Steven A. Osofsky, Tonie E. Rocke, Paul L. Barrows, “Joining forces to Improve Our World”, *Conservation Biology*, vol. 16, n° 5, October 2002, p. 1433.

<sup>86</sup> <<http://www.wcs.org/conservation-challenges/wildlife-health/wildlife-humans-and-livestock/one-world-one-health.aspx>>, last accessed 3 January 2011.

Interdisciplinary Bridges to Health in a Globalized World”. It produced the Manhattan Principles and launched the concept “One World One Health™,” which is a registered trademark of the Wildlife Conservation Society. The WCS is an organisation created in 1895 that aims at protecting biodiversity and that sees disease as a global challenge, requiring strengthened cooperation.

The 2004 Manhattan Principles and the WCS event on One World One Health™ were real breakthroughs in the process of the development of One Health. However, other initiatives also played a role. Jakob Zinsstag, Esther Schelling, Bassirou Bonfoh, et al. propose a list of the meetings and conferences that contributed to spreading One Health.<sup>87</sup> One needs to mention in particular the “One Health Initiative”. The Initiative is a website with an advisory board that publishes One Health news.<sup>88</sup> It is actively supported by Laura Kahn, Bruce Kaplan, Tom Monath and Jack Woodall and its goal, according to Laura Kahn, is “to increase communication and collaboration between human, animal, and ecosystem health professionals.”<sup>89</sup> The four health specialists have published many articles in many specialized journals that have contributed to helping health specialists from different sectors to take ownership of One Health. But above all, the One Health Initiative is supported by some 43 organisations and 551 individuals as of December 2011, including the American Veterinary Medical Association and the American Medical Association. Among the members are both animal and human health professional organisations that are mainly American but also from India, Nigeria, Italy, New Zealand, etc.<sup>90</sup>

Parallel to the One Health Initiative, a rapprochement between two American professional organisations took place leading to the production of another vision of One Health. In June 2007, the American Medical Association (AMA) passed a resolution supporting the One Health Initiative,<sup>91</sup> and one month later the Presidents

---

<sup>87</sup> Jakob Zinsstag, Esther Schelling, Bassirou Bonfoh, et al., “Towards a ‘one Health’ research and application tool box”, *Veterinaria Italiana*, vol. 45, n° 1, p. 122.

<sup>88</sup> <<http://www.onehealthinitiative.com/advBoard.php>>, last accessed 3 January 2011. The advisory board includes David Heymann, the director of the U.K. Health Protection Agency or Michael T. Osterholm, Director of the Center for Infectious Disease Research & Policy (CIDRAP) Academic Health Center—University of Minnesota.

<sup>89</sup> “Dr Laura Kahn, on the One Health Initiative”, *ResearchMediaLtd*, 21 July 2010, <<http://www.research-europe.com/index.php/2010/07/dr-laura-kahn-on-the-one-health-initiative/>>, last accessed 23 November 2010.

<sup>90</sup> <<http://www.onehealthinitiative.com/supporters.php>>, last accessed 3 January 2011. Bruce Kaplan, Laura H. Kahn, Thomas P. Monath, Jack Woodwall, “One Health and parasitology”, *Parasites and Vectors*, vol. 2, n° 36, 12 August 2009.

<sup>91</sup> American Medical Association House of Delegates, Resolution 530 (A-07), <<http://www.onehealthinitiative.com/publications/AMA%20Resolution%20530%20a-07-One%20Health-Final%206%2025%2007.pdf>>, last accessed 3 January 2011.

of AMA and the American Veterinary Medical Association (AVMA) took part in a joint press conference.<sup>92</sup> Afterwards, the American Veterinary Medical Association (AVMA) launched a One Health Initiative Task Force, which started its work in November 2007 and whose final report was published on 15 July 2010: "One Health: A New Professional Imperative".<sup>93</sup> The Task Force included liaisons representatives from the American Medical Association (AMA) and American Public Health Association (APHA). It led to the creation of a One Health commission in August 2009.<sup>94</sup> The Commission organised an event in November 2009, but its website does not register much activity since then.<sup>95</sup>

Other champions of One Health should also be acknowledged such as Jakob Zinsstag, a veterinarian at the Swiss Tropical and Public Health Institute in Basel, Peter Rabinowitz, physician at Yale University in New Haven, Connecticut or Lisa Conti, veterinarian with the Florida Department of Health.<sup>96</sup> It is also important to mention the evolution of the organisation that changed its name from Wildlife Trust to Ecohealth Alliance and supports the "One Health Alliance of South Asia" (OHASA), a partnership that promotes transboundary cooperation and surveillance in the areas where diseases are most likely to emerge.

Organisations that promote One Health include organisations as different as the World Small Animal Veterinary Association,<sup>97</sup> the surveillance organisation ProMED,<sup>98</sup>

---

<sup>92</sup> American Veterinary Medical Association (AVMA), One Health Initiative Task Force, final report, *One Health: A New Professional Imperative*, 15 July 2010, p. 7.

<sup>93</sup> American Veterinary Medical Association (AVMA), *op. cit.*

<sup>94</sup> Composed of Dr. Ronald Atlas, chair of the board, representing the American Society for Microbiology, Dr. Albert Osbahr III, vice-chair, representing the American Medical Association; Dr. Michael Cates, secretary-treasurer, representing the American Veterinary Medical Association; Elizabeth Bishop, representing the Association of Academic Health Centers; Dr. John Fischer, representing the Association of Fish and Wildlife Agencies; Dr. James Fox, representing the Association of American Veterinary Medical Colleges; Dr. Susan Polan, representing the American Public Health Association; and Dr. Wiley "Chip" Souba, representing the Association of American Medical Colleges.

<<http://www.onehealthcommission.org/news/2009-08-26-v2.pdf>>, last accessed 3 January 2011.

<sup>95</sup> <<http://www.onehealthcommission.org/summit.html>>, last accessed 3 January 2011.

<sup>96</sup> Rabinowitz and Conti published a book called *Human-Animal Medicine. Clinical approaches to Zoonoses, Toxicants and Other Shared Health Risks*, Saunders, Maryland Heights, MD, USA, 2009. See "Dr Laura Kahn, on the One Health Initiative", *ResearchMediaLtd*, 21 July 2010, <<http://www.research-europe.com/index.php/2010/07/dr-laura-kahn-on-the-one-health-initiative/>>, last accessed 23 November 2010.

<sup>97</sup> <<http://www.vin.com/proceedings/Proceedings.plx?CID=WSAVA2010&PID=56226&Print=1&O=Generi>>, last accessed 6 December 2010.

<sup>98</sup> <<http://www.onehealthinitiative.com/publications/ProMED%20article2.pdf>>, last accessed 6 December 2010

the British Royal Society (through the concept 'One Medicine'),<sup>99</sup> the US Army Medical Department,<sup>100</sup> and the American Society of Toxicologic Pathology.<sup>101</sup> The Federation of Veterinarians of Europe (FVE) also supports One Health<sup>102</sup> (it became its top priority in November 2007<sup>103</sup>) but it approaches the concept in such a way that it supports exclusively the work of veterinarians by reducing One Health to the idea that having healthy animals equals maintaining healthy people. Professional organisations obviously see in One Health a useful tool to promote their interests and defend the profession and the health service to which it is related (animal health, public health, environmental services, etc.).

One Health has spread to other networks, and other countries, as it has proven to be a useful tool in supporting different causes (surveillance against infectious diseases, research, multisector and transboundary cooperation, animal health, etc.). In Africa, a research network adopted the One Health logo and approach: "The Afrique One network, a One Health Initiative".<sup>104</sup> In Bangladesh, demonstrating the way the approach spreads, the Chittagong Veterinary and Animal Sciences University produced a newsletter in January 2010 and gave a full page to an article by Bruce Kaplan, Laura H. Kahn, Thomas P. Monath, and Jack Woodall in *Parasites & Vectors* on "One Health' and parasitology".<sup>105</sup> It also explains that:

*In Bangladesh, [CVASU] was the pioneer to open a discussion on "One Health" concept with experts from partner organizations who later joined to form "One*

<sup>99</sup> The Royal Society, "An integrated approach to infectious diseases in the UK", RS Policy Document 2/09, <[royalsociety.org/WorkArea/DownloadAsset.aspx?id=5448](http://royalsociety.org/WorkArea/DownloadAsset.aspx?id=5448)>, last accessed 3 January 2011.

<sup>100</sup> According to the Chief of the Army Veterinary Corps in 2007: Brigadier General Michael B. Cates, "Healthy Animals, Healthy People: Inextricably Linked", Army Medical Department Journal, July-September 2007, p. 4.

<sup>101</sup> P.W. Snyder, P. Mann, B. Bolon, et al., "Brief Communication. The Society of Toxicology Pathology and the "One Health" Initiative", <[http://www.toxpath.org/Position\\_Papers/One\\_Health.pdf](http://www.toxpath.org/Position_Papers/One_Health.pdf)>, last accessed 3 January 2011.

<sup>102</sup> FVE, "One Health: Healthy animals = Healthy people", 2010, <[http://www.fve.org/news/publications/pdf/fve\\_new\\_one\\_health\\_leaflet\\_2010.pdf](http://www.fve.org/news/publications/pdf/fve_new_one_health_leaflet_2010.pdf)>, accessed 23 November 2010.

<sup>103</sup> The World Bank (Agriculture and Rural Development. Health, Nutrition and Population), *People, Pathogens and Our Planet. Volume 1: Towards a One Health Approach for Controlling Zoonotic Diseases*, Report n° 50833-GLB, 2010, p. 20.

<sup>104</sup> Afrique One is an African led consortium supported by the Wellcome Trust Under the African Institutional Capacity building Initiatives. It aim to build research capacity with the One health as an entry point for a core of African researchers with their partner in the North with a track record on one health implementation in West Africa and Central Asia. <[www.afriqueone.net/eng/presentation-afriqueone-eng.php](http://www.afriqueone.net/eng/presentation-afriqueone-eng.php)>, last accessed 6 December 2010.

<sup>105</sup> *Pathobiology eNews*, "Recommended article", vol. 1, n° 1, January 2010, <<http://www.onehealthinitiative.com/publications/DPP%20eNewsletter%20Vol1%20Issue1.pdf>>, last accessed 3 January 2011.

*Health, One World – Bangladesh Initiative”, now known  
as “One Health Bangladesh”.<sup>106</sup>*

In Nigeria, Babalobi Oo, from the Department of Veterinary Public Health and Preventive Medicine at the University of Ibadan, proposed that the Annual Congress of the Nigerian Veterinary Medical Association (NVMA) adopt a resolution supporting the One Health Initiative, which it did in October 2008. The goal was to replicate the AMA/AVMA partnership with the Nigerian Medical Association and the NVMA.<sup>107</sup> So far, however, only the NVMA and the Nigerian Biomedical and Life Scientists are official supporters of the One Health Initiative. It is nevertheless interesting to see how central the American example was to this endeavour.

Publications have also contributed to the spread of One Health, such as the *British Medical Journal*<sup>108</sup> and the *Veterinary Record*<sup>109</sup> that co-published volumes highlighting the links between the two professions and the “One Medicine” concept in 2005. Other publications that covered One Health issues include *EcoHealth*, which was created in 2004 and whose editor-in-chief is Peter Daszak (the President of EcoHealth Alliance - formerly Wildlife Trust), *Emerging Infectious Diseases* by CDC, *Veterinaria Italiana*, and *Transboundary and Emerging Diseases* from Vancouver, Canada.

So the concept One Health spreads through networks, through the process of new actors owning One Health publications and terminology. It also spreads through conferences. Indeed, recently, conferences on OH have taken place in many different countries including the US,<sup>110</sup> Hong Kong,<sup>111</sup> Bangladesh,<sup>112</sup> and the United

---

<sup>106</sup> *Ibid.*

<sup>107</sup> Babalobi Oo, “Promoting the “One medicine, one health” initiative in Nigeria”, <<http://www.sciquest.org.nz/elibrary/download/68268/T3-P12+-Promoting+the+%22One+medicine,+one+health%22+initiative+in+Nigeria>>, last accessed 3 January 2011.

<sup>108</sup> Vol. 331, 26 November 2005.

<sup>109</sup> Vol. 157, n° 22, pp. 673-696.

<sup>110</sup> “One Health Approach to Influenza: Assessment of Critical Issues and Options”, Washington, D.C., 1-2 December 2009: T.F. Powdrill, T.L. Nipp, J.L. Rinderknecht, “Conference Summary. One Health Approach to Influenza: Assessment of Critical Issues and Options”, *Emerging Infectious Diseases*, vol. 16, n° 8, August 2010 ; “One Health: Attaining Optimal Health for People, Animals, and the Environment”, San Diego, 19 February 2010, <<http://aaas.confex.com/aaas/2010/webprogram/Session1240.html>>, last accessed 3 January 2011.

<sup>111</sup> One Health International Workshop, 10 December 2009, <[www6.cityu.edu.hk/onehealth/programme.html](http://www6.cityu.edu.hk/onehealth/programme.html)>, last accessed 3 January 2011.

<sup>112</sup> Chittagong Veterinary and Animal Sciences University and One World One Health: Bangladesh Initiative, “Networking to promote Change Towards One World One Health, Chittagong, 23-25 September 2010”,

Kingdom.<sup>113</sup> The first International One Health Congress took place in Melbourne from the 14<sup>th</sup> to 16<sup>th</sup> of February, 2011.<sup>114</sup>

Even if there is a large grassroots mobilisation in favour of One Health, not all of the organisations that one might expect to find in the “movement” are present. It remains largely US-centered (EU level organisations are present but not all European members’ professional organisations took position in favour of One Health; organisations from China, Brazil, Russia and many other countries did not take public positions). Furthermore, large NGOs like WWF or IUCN (International Union for Conservation of Nature) that could play important roles are not involved on this approach.

## THE STATE LEVEL: THE BLOCKS ON WHICH TO BUILD THE APPROACH

*[A]s Governments we must take a more comprehensive and holistic approach. [W]e need to focus as much on human health as on animal health. [...] The Government of India supports the concept of ‘One Health’ based on an integrated approach to both animal and human health.”<sup>115</sup>*

As the Prime Minister of India declared officially that the Government of India supports the concept of ‘One Health’, we were reminded that the real actors of “One Health” remain the states, and regional political bodies, even more so than international organisations, who depend on their state members or grassroots movements. The states, the foundations of “One Health”, have contributed in two ways. Through patient ministerial conferences negotiations, One Health started to play a larger role on the avian and human influenza agenda. Then states gave consistency to the approach, as

---

<<http://www.cvasu.ac.bd/cvasu/latestnews/Announcement%20&%20Invitation%20for%20Scientific%20Conference.pdf>>, last accessed 3 January 2011.

<sup>113</sup> “Shifting from Emergency Response to Prevention of Pandemic Disease Threats at Source, Chatham House”, London, 16-17 March 2010, <<http://www.cdc.gov/onehealth/meetings.html#three>>, last accessed 3 January 2011.

<sup>114</sup> <<http://www.onehealth2011.com/>>, last accessed 10 February 2011.

<sup>115</sup> Dr Manmohan Singh, Prime Minister of India, “PM’s address at the Internationale Ministerial Conference on Avian and Pandemic Influenza”, 5 December 2007, New Dehli, <<http://pmindia.nic.in/speech/content.asp?id=623>>, last accessed 23 November 2010.



they owned One Health and transformed themselves in order to defeat diseases with new institutions, coordinating mechanisms, and tools put in place to support One Health principles and approaches, and as they started to found One Health projects.

## **A GROWING ENGAGEMENT TO SUPPORT OH AT THE GLOBAL LEVEL: THE MINISTERIAL CONFERENCES**

The ownership of One Health by states was a long-maturing process that took form through the international ministerial conferences on Avian and pandemic Influenza (IMC-API). Several of those conferences were organised after the start of the avian influenza pandemic.<sup>116</sup> However, it was only before the New Delhi conference in December 2007 that the One Health concept really emerged on the agendas of those meetings. “[I]n New Delhi (...) the concept was put forward for further development, at the initiative of the [European] Commission and the USA, in coordination with UNSIC.”<sup>117</sup> The Indian government fully supported this initiative and proposed a vision and road map to accomplish “One World One Health™,” but it apparently did not manage to gain the support of all those attending the conference for the roadmap: indeed there was no final declaration of the conference to support it.<sup>118</sup>

*One year later in Sharm el-Sheikh, even though the six organisations FAO/OIE/UNICEF/UNSIC/WHO/the World Bank distributed their consultation document, “Contributing to One World One Health”, there was no declaration supporting it. It wasn’t until April 2010 at the Hanoi conference that the ministers and their representatives agreed on the Hanoi Declaration, according to which: “One Health is a first step towards improving health outcomes through incorporating*

---

<sup>116</sup> 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.

<sup>117</sup> Regional Strategy for Asia 2007-13 Cross-Border Co-operation in Animal and human Health, European Commission, Directorate General External Relations Avian Influenza External Response Coordination, EuropeAid Cooperation Office, “Outcome and Impact Assessment of the Global Response to the Avian Influenza Crisis”, Final Report, August 2010, p. 20.

<sup>118</sup> Press information bureau of the government of India, “Vision and Road Map”, 6 December 2007, <[http://siteresources.worldbank.org/INTTOPAVIFLU/Resources/NewDelhi\\_RoadmapFinal.pdf](http://siteresources.worldbank.org/INTTOPAVIFLU/Resources/NewDelhi_RoadmapFinal.pdf)>, accessed 22 November 2010.

*human and animal health policies in all relevant sectors.*<sup>119</sup>

As mentioned above, the US and the European Union (through the Commission and in advance of its member states), both played a leading role in this process. The European Union Commission made an official statement in favour of One Health in Sharm-El-Sheikh, 2008.<sup>120</sup>

A parallel process to IMCAPI also played a central role: two expert conferences on One Health, the first in Winnipeg, Canada (March 2009) organized by the Public Health Agency of Canada, and the second in Stone Mountain, Georgia, United States (May 2010), organized by the CDC (United States Centers for Disease Control and Prevention). Both conferences aimed at implementing and operationalising One Health.

Each state has different reasons to mobilise in favour of One Health. For example, the European Commission sees One Health as a development issue (emerging diseases and weak health systems as degrading livelihoods and impeding growth and development), whereas the US, Canada, and the United Kingdom, all of whom have had to manage outbreaks of infectious diseases in the recent past (SARS in Canada, for example), see infectious diseases as a security issue. Furthermore, within the complexity of a state's administration, bureaucratic reasons or the promotion of its specific institutional interests may also explain why a given administration adopts One Health.

## ***INNOVATIONS AT THE NATIONAL LEVEL IN SUPPORT OF OH***

Adding to this IMCAPI global process of support for One Health, several countries have seen changes and innovations take form in order to better integrate the One Health approach.

---

<sup>119</sup> Hanoi Declaration. At the International Ministerial Conference: "Animal and Pandemic Influenza: the Way Forward", Hanoi, Vietnam, 19-21 April 2010. IMCAPI Hanoi 2010, p. 2.

<sup>120</sup> Intervention of Director James Moran "One Health: a policy framework for an integrated approach against serious hazards -and towards development-at the animal, human and ecosystems interface. Author: A. Vandersmissen (DG External Relations) with contributions of Drs F. Karcher and A. Brouw (DG Health and Consumers), Dr P. Steinmetz (DG Development) and Mrs Soukupova (DG EuropeAid Co-operation office). In: Alain Vandersmissen, "One Health": From a Classical Concept to a Modern Dynamics for Global Co-operation", *op. cit.*, p. 7.



In the UK, already in 2005, UK's Chief Medical Officer (CMO), Sir Liam Donaldson and the Chief Veterinary Officer (CVO), Dr. Debby Reynolds, signed a common paper on their "integrated working" in the *Veterinary Record* and *BMJ*.<sup>121</sup> Recognising "the fundamental differences between the roles and responsibilities of vets and doctors,"<sup>122</sup> they highlighted the importance of dialogue and cooperation. In 2003, a National Expert Panel on New and Emerging Infections (NEIPNEI) was put in place to facilitate the integration of human and animal health surveillance. The Health Protection Agency was also created that year. Three advisory bodies advise both the CMO and the CVO which increases open sharing of information and transparency:<sup>123</sup> the Advisory Committee on Dangerous Pathogens (created in 1981) that shares its secretariat with DEFRA (Department for Environment, Food and Rural Affairs), the Department of Health, and the Health and Safety Executive; the Advisory Committee on the Microbiological Safety of Food (set up in 1990); and the Special Advisory Committee on Antimicrobial Resistance.<sup>124</sup> In this paper, the CVO and the CMO also mention efforts to harmonize laboratory standard operating procedures and, even more interestingly, a joint group created in February 2004 that does horizon scanning of animal and human infections and risks called the HAIRS group (Human and Animal Infections and Risks Surveillance).<sup>125</sup> While the HAIRS group is chaired by someone from the HPA, another joint group, the Zoonoses Group or more precisely, the UK Zoonoses, Animal Diseases and Infections Group, is shared alternatively by the CMO and the CVO and is often seen as exemplary to One Health.<sup>126</sup> The UK zoonoses group has existed since 2001 (and the England zoonoses group, since 1999).<sup>127</sup>

<sup>121</sup> L.J. Donaldson, D.J. Reynolds, "Integrated working", *The Veterinary Record*, 26 November 2005, pp. 680-681; L.J. Donaldson, D.J. Reynolds, "UK government collaborations to manage threats to animal and human health", *BMJ*, vol. 331, 26 November 2005, pp. 1216-1217.

<sup>122</sup> L.J. Donaldson, D.J. Reynolds, "Integrated working", *op. cit.*, p. 680.

<sup>123</sup> *Ibid*, p. 681.

<sup>124</sup> It became in April 2007 the Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI).

<sup>125</sup> "The joint Human Animal Infections and Risk Surveillance (HAIRS) group is a multi-agency and cross-disciplinary horizon scanning group with members from the Health Protection Agency, Department for the Environment, Food and Rural Affairs, Veterinary Laboratories Agency and Department of Health horizon scanning group. It is chaired by the HPA's Department of Gastrointestinal, Emerging and Zoonotic Infections (GEZI) at HPA Colindale. The Chair of the National Expert Panel on New and Emerging Infections (NEPNEI) and representatives from Animal Health, the Food Standards Agency, Public Health Wales, Health Protection Scotland, the Scottish Government, and the Public Health Agency of Northern Ireland are also members."

<<http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/EmergingInfections/HAIRS/>>, last accessed 4 January 2011. See also: A.L. Walsh, D. Morgan, "Identifying hazards, assessing the risks", *The Veterinary Record*, 26 November 2005, pp. 684-687.

<sup>126</sup> Jakob Zinsstag, Esther Schelling, Bassirou Bonfoh, et al., "Towards a 'One Health' research and application tool box", *Veterinaria Italiana*, vol. 45, n° 1, p. 122; The World Bank (Agriculture and Rural

#### The UK Zoonoses, Animal Diseases and Infections (UKZADI) Group

The UK Zoonoses, Animal Diseases and Infections (UKZADI) Group is an independent committee made up of experts from across the agricultural and public health departments.

The Group was formed by the amalgamation of the UK Zoonoses Group (UKZG) and the Surveillance Group on Diseases and Infections in Animals (SGDIA). The formation of the Group was agreed by the Defra Minister Jane Kennedy in late 2008. It was agreed that meetings would be chaired in rotation by the UK Chief Medical Officers (CMO) and Chief Veterinary Officers (CVO) in the Devolved Administrations.

The Group advises as appropriate the CMO and CVO, Department of Health (DH) in England, Welsh Assembly Government (WAG), Scottish Government (SG), Department for Agricultural and Rural Development Northern Ireland (DARDNI) and Food Standards Agency (FSA) on important trends and observations which impact on animal and public health including where necessary preventative and remedial action.

The Group's role is also to provide a strategic overview and means of ensuring overall co-ordination of public health action at the UK, national and local level with regard to existing and emerging zoonotic infections and trends in antimicrobial resistance and animal-related chemical risks to the food chain.<sup>128</sup>

India not only took an early position in favour of One Health, but it also put in place a “multi-sectoral collaboration to support zoonoses prevention and control approaching

---

Development. Health, Nutrition and Population), *People, Pathogens and Our Planet. Volume 1: Towards a One Health Approach for Controlling Zoonotic Diseases*, Report n° 50833-GLB, 2010, p. 22.

<sup>127</sup> DEFRA, *Zoonoses Report*, 2003, p. 8,

<<http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/zoonoses/documents/reports/zoonoses2003.pdf>>, last accessed 4 January 2011.

<sup>128</sup> <<http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/zoonoses/ukzadi/index.htm>>, last accessed 4 January 2011.

‘One Health’<sup>129</sup> that is called “Roadmap to combat zoonoses in India Initiative” (RCZI). The project started in 2009 and includes a joint working group composed of 13 national and international governmental and non-governmental organisations (Department of Animal Husbandry, Ministry of Agriculture, Wild Life Institute of India, National Center for Disease Control, WHO India, etc.). They contribute to capacity building, strategic research agenda setting, health communication, strengthening of public health laboratory services, and programme evaluation.<sup>130</sup> India has also set up a national standing committee on zoonoses that combines animal health, human health and wildlife health.<sup>131</sup>

In the United States, USAID has founded an ambitious Early Warning project (up to \$75 million over five years) of which One Health is a core principle.<sup>132</sup> Furthermore, the CDC National Center for Zoonotic, Vector-borne, and Enteric Diseases that was created after the West Nile virus outbreak in 1999<sup>133</sup> became the National Center for Emerging and Zoonotic Infectious Diseases in July 2010.<sup>134</sup> Its first director, Lonnie King, is an important champion of One Health.<sup>135</sup> The Center’s website refers very clearly to One Health:

*Our work is guided in part by a holistic "One Health" strategy, which recognizes the vital interconnectedness of microbes and the environment. Through a comprehensive approach involving many scientific disciplines, we can attain better health for humans and animals and improve our environment.*<sup>136</sup>

Furthermore, inside the Center, the One Health Office promotes a One Health approach and collects information on One Health and the conferences devoted to it on their website.<sup>137</sup>

---

<sup>129</sup> Manish Kakkar (Public Health Foundation of India), “Roadmap to combat zoonoses in India (RCZI) Initiative”, CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, “Operationalizing “One Health”: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 4-6 May 2010.

<sup>130</sup> Roadmap to Combat Zoonoses in India, <[http://11.93.4.145/One\\_Health\\_Developments.html](http://11.93.4.145/One_Health_Developments.html)>, last accessed 4 January 2011.

<sup>131</sup> Manish Kakkar (Public Health Foundation of India), “Roadmap to combat zoonoses in India (RCZI) Initiative”, CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, “Operationalizing “One Health”: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 4-6 May 2010.

<sup>132</sup> “Stephen S. Morse Named Director of USAID Early Warning Project, Mailman School of Public Health, Columbia University, <[www.mailman.columbia.edu/print/2032](http://www.mailman.columbia.edu/print/2032)>, last accessed 4 January 2011.

<sup>133</sup> ResearchMediaLtd, “Dr Laura Kahn, on the One Health Initiative”, *op. cit.*

<sup>134</sup> <<http://www.cdc.gov/ncezid/>>, last accessed 4 January 2011.

<sup>135</sup> <<http://www.cornell.edu/video/index.cfm?VideoID=430>>, <<http://vet.osu.edu/cvm/dr-lonnie-kings-biography>>, last accessed 14 February 2011.

<sup>136</sup> *Ibid.*

<sup>137</sup> <<http://www.cdc.gov/onehealth/index.html>>, last accessed 4 January 2011.

In the European Union, on the side of its engagement in the global IMCAPI process, the European Commission adopted the One Health approach by implementing related activities both at the level of the External Relations Directorate General<sup>138</sup> and of the DG Health and Consumers.<sup>139</sup>

Kenya is one of the developing countries where innovations have been put in place. There, the International Emerging Infectious Diseases Program provides joint surveillance systems and “uses its diagnostic facilities for both human and animal specimens.”<sup>140</sup> Furthermore, the CDC Centre in Nairobi “seems to have a well-integrated disease surveillance system, and is a good example of the integration of the different disciplines.”<sup>141</sup>

Even in a country like China, One Health has started to exist inasmuch as it means cooperation between Ministries of Health, Agriculture, and Environment. According to Jian Du, from the Chinese Animal Control Center,

*One Health in China [is] Just [a] Concept, no good action or example between human health and veterinary health. [But there is also the] establishment of good coordination framework among Ministry of Health, Ministry of Agriculture, Bureau of Forestry, Bureau of Environment.*<sup>142</sup>

In several countries, One Health innovations can be spotted even if broad country-level support for the OH approach remains difficult to detect. In Germany, for example, a “zoonoses research program [...] prescribes compulsory cooperation between physicians and veterinarians.”<sup>143</sup> Furthermore, in several countries, organisations have been created which seem to stand “at the human-animal interface”: the Canadian Science Centre for Human and Animal Health,<sup>144</sup> the WHO/FAO Collaborating Center for Research and Training for Emerging and Other

<sup>138</sup> Thanks for example to the Asia Highly Pathogenic and Emerging and Reemerging Diseases Programme (HPED). Alain Vandersmissen, “Cross-border Co-operation in Animal and Human Health in Asia 2007-2013 -Flashback, State of Play and Perspectives”, p. 14, <[www.asef.org/index.php?download...](http://www.asef.org/index.php?download...)>, last accessed 4 January 2011.

<sup>139</sup> For example, the EU Vet Week 2010. See for example the website: <<http://www.one-health.eu/ee/en/>>, last accessed 4 January 2011.

<sup>140</sup> The World Bank (Agriculture and Rural Development. Health, Nutrition and Population), *op. cit.*, p. 21.

<sup>141</sup> *Ibid.*, p. 22.

<sup>142</sup> Jian Du (Department of Animal Disease Surveillance, CADC), “Two Zoonotic Diseases Surveillance & One Health in China”, CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, “Operationalizing “One Health”: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 4-6 May 2010.

<sup>143</sup> The World Bank, *op. cit.*, p. 22.

<sup>144</sup> *Ibid.*, p. 21; <<http://www.phac-aspc.gc.ca/laboratories-eng.php>>, last accessed 4 January 2011.

Parasitic Zoonoses in Denmark,<sup>145</sup> the now closed Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease,<sup>146</sup> or the New Zealand National Centre for Biosecurity and Infectious Diseases.<sup>147</sup>

*The IMCAPI conference in Hanoi seems to have had an impact even on Indonesia. After the conference, a press release explained that, "It [is] also important: [...] using of words 'One Health' as substitution of One World One Health (OWOH) which covers three sectors: Human Health, Animal Health and Environmental Health."*<sup>148</sup>

Several states indeed seem to have adopted the One Health approach, or at least some part of it. The global process, with the IMCAPI conferences more and more devoted to One Health, and the national innovations and One Health-related institutions, programmes, and coordination devices (see infra for more on cooperation devices) contribute to the development of the One Health approach and help draw its specific governance face.

With international organisations', grassroots movements', and states' support, One Health governance appears to be a complex network of actors, more or less engaged, but all concerned by One Health. Indeed, while the Stone Mountain meeting called for the development of a One Health global network (OHGN),<sup>149</sup> in a way it already exists very informally. However, it needs to grow and develop, involve more human health professionals and more countries (France, Brazil, Russia for example), and find ways to manage its complexity in order to tie all those disparate strands together. Of course, the Stone Mountain working group's vision of One Health is more precise. They recommend the setting of a "virtual umbrella coordinating body for One Health leadership and advocacy" with a specific and restrictive selection and recruitment process. Such an innovation could give a new boost to One Health but it will be difficult to put in place as a legitimate and efficient body. Informal person-to-person decision-making between high-level influenza coordinators nominated by their states

<sup>145</sup> United Nations, The World Bank, Animal and Pandemic Influenza, A Framework for Sustaining Momentum, *op. cit.*, p. 97; The World Bank, *op. cit.*, p. 22;

<<http://www.food.dtu.dk/Default.aspx?ID=8573>>, last accessed 4 January 2011.

<sup>146</sup> S.J. Prowse, N. Perkins, H. Field, *op. cit.*, p. 76; <<http://www.abcrc.org.au/>>, last accessed 4 January 2011.

<sup>147</sup> United Nations, The World Bank, *op. cit.*, p. 84; <<http://www.ncbid.govt.nz/>>, last accessed 4 January 2011.

<sup>148</sup> Indonesian Ministry of Health, Press release, "77th International Ministerial Conference in Hanoi Discussed Human, Animal and Environmental Health", <<http://www.depkes.go.id/en/index.php/news/press-release/666-77th-international-ministerial-conference-in-hanoi-discussed-human-animal-and-environmental-health.html>>, last accessed 4 January 2011.

<sup>149</sup> CDC, "Operationalizing 'One Health'. A brief overview of the Stone Mountain meeting", p. 2, <[http://www.cdc.gov/onehealth/pdf/atlanta/brief\\_overview.pdf](http://www.cdc.gov/onehealth/pdf/atlanta/brief_overview.pdf)>, accessed November 15, 2010.

or among themselves was a trademark on Avian and Pandemic global governance. It will very likely remain so for One Health governance and national and international coordinators will continue to provide leadership to One Health.

One should also note the proposal of the World Bank and UNSIC to build a

*Global Alliance or executive level body which includes representation from governments and international agencies, regional bodies and academia to provide foresight, strategic guidance and high level advocacy for One Health.*<sup>150</sup>

Nonetheless, the forming of such an alliance is very unlikely because it would result in the creation of a new institution, something that has been resisted since the beginning of the fight against avian influenza.

At the same time, it is important to note the emergence of centrifuge tensions that may become difficult to contain in this volatile and weak governance framework. As long as One Health remains an insufficiently known and under-used concept, it will be kept on the sidelines of the central global health arena. However, as it spreads, it will need to keep a firm balance on its three legs, the international organisations, the grassroots movements, and the states. This complex process may be strengthened by International Ministerial Conferences devoted to One Health, with Agriculture and Health (and maybe also Environment) ministers, the support of the international organisations, and the advice of grassroots experts: strong political leadership, strong expertise, strong ownership. Such a conference will take place in Cancun, Mexico on 13-15 November 2011.

---

<sup>150</sup> United Nations, The World Bank, Animal and Pandemic Influenza, A Framework for Sustaining Momentum, Fifth Global Progress Report, July 2010, pp. 100-101.

## VARIATIONS IN MEANING

If I have succeeded in proving that it is possible to sketch the outlines of One Health governance, with the idea that those who mobilize and own One Health give it meaning, this process tends to blur and broaden the precise definition(s) of One Health into a very general vision where the name used (One Health) is the only element all tend to agree on.

We saw in the introduction that a minimal consensus can be achieved. As explained, all interviewees but one,<sup>151</sup> agreed that One Health (OH) means both “better cooperation between physicians and veterinarians” and “working at the interaction (interface) between human and animal health and the ecosystem.” Those two dimensions (cooperation between human and animal health and work at the human-animal-ecosystems interface) could then be considered the most commonly agreed-upon core, *the two roots of One Health*.

However, to go beyond these core two roots, it is interesting to see how variations in meaning of the One Health approach, when precisely studied, can reveal a wider consensus on the meaning of One Health, the different and more precise visions complementing each other to give One Health a more ambitious agenda than first expected. Indeed, framing One Health in different ways helps to make sense of the approach.

### **DIFFERENT CONCEPTS, CLOSELY BOUND VISIONS**

On the side of the concept One Health, several concepts are used: “One Medicine”, “One World One Health™”, “Ecohealth”, “veterinary public health”.

“One Medicine” was framed by Calvin Schwabe in the 1980’s and promotes cooperation between animal and human health.<sup>152</sup> According to Jakob Zinsstag,

<sup>151</sup> Prof. Bonfoh Bassirou, Managing Director, Centre Suisse de Recherches Scientifiques en Côte d’Ivoire.

<sup>152</sup> C.W. Schwabe, *Veterinary medicine and human health*, Willimas and Wilkins, Baltimore, 1984.



Esther Schelling, Bassirou Bonfoh, et al., it expanded into One Health by taking health systems into account.<sup>153</sup> “One World One Health™” is the trademark of the Wildlife Conservation Society but is often not seen as very different from the One Health concept. “Veterinary public health” is more limited than One Health, as it requires “the understanding and application of veterinary medical science”, according to the WHO definition.<sup>154</sup> “Eco-Health” has a journal devoted to it and is more inscribed in the environment and biodiversity fields than is One Health, which is more developed in public and animal health.<sup>155</sup> There are finely-shaded differences between the concept that will explain why someone will prefer to use this or this concept. However, except for the “veterinary public health” concept, all the concepts cover a similar reality.

In the frame of the survey I organized, I asked interviewees, “How different is One Health from the concepts ‘One World One Health™’ or ‘One Medicine’?” Six did not see the difference or considered that they were “all ‘brands’ of the same conceptual framework.” One of them even considered that “trying to define the difference is like to cut water.” Two considered they were just “evolutions of the concept” or “historical sequentation.” The nine others offered interpretations that are often conflicting, seeing some concepts as broader than others. According to one, OWOH focussed on conservation and wildlife, One Medicine on the interface between human and animal, and One Health was “an extension of one medicine towards considerations that human and animals are part of the ecosystems.”

As I just showed it, there is no consensus on the shades of difference existing between the various concepts. It seems to be that the three concepts belong to the same family of thought and are the result of historical evolution. Some differences persist however, as One Medicine focussed on the cooperation between veterinarians and medicine doctors, while the OWOH concept introduced a strong focus on the role of ecosystems in the interface. One Health is less bounded by this focus on wildlife and therefore can be mobilized also by actors (e.g. veterinarians, physicians, biologists, ecologists, etc.) preferring to focus only on the animal-human interface, even if one of its two core roots is “working at the interaction between human and animal health and the ecosystem.” In that sense it is a more open, flexible, and broader concept.

---

<sup>153</sup> Jakob Zinsstag, Esther Schelling, Bassirou Bonfoh, et al., “Towards a ‘one Health’ research and application tool box”, *Veterinaria Italiana*, vol. 45, n° 1, p. 122.

<sup>154</sup> C. Stewart, J. Cowden, J. McMenamin, B. Reilly, “Veterinary public health”, *BMJ*, vol. 331, 26 November 2005, p. 1213.

<sup>155</sup> David Waltner-Toews, “Eco-Health: A primer for veterinarians”, *Canadian Veterinary Journal*, vol. 50, May 2009, pp. 519-521; Jakob Zinsstag, Esther Schelling, Bassirou Bonfoh, et al., “Towards a ‘One Health’ research and application tool box”, *Veterinaria Italiana*, vol. 45, n° 1, p. 124.



The choice to migrate from one concept to the next may be more the result of an attempt to try to control and refine the concept in use than a search for improved meaning, especially in the case of OWOH, a trademark of WCS.

### ***WORKING BEYOND PROFESSIONAL BARRIERS: WHICH BARRIERS?***

If differences in concepts do not imply strong variations in meaning, it does not imply that One Health means the same to everybody, and one difference concerns the composition of the group that is should work together in favour of One Health. According to one of our interviewees, “the bottom line is to work as a group”. But who is part of the group? A minima, we saw that there was a consensus on the importance of cooperation between veterinarians and health specialists (cf. supra). However, when one closely looks at some publications, the group involved seems much larger. For example, the World Bank pushes for “partners outside of classical medicine” to be included.<sup>156</sup> This may reflect the CDC approach of involving experts from different scientific disciplines.<sup>157</sup> The April 2010 joint meeting organized by FAO, OIE and WHO in Verona also promotes broader cooperation, but with ecologists and wildlife scientists.<sup>158</sup>

Some flexibility on the barriers of the group may be in the spirit of “One Health”, as “working as a group” makes you a group, rather than predefined limits. Specific problems to be tackled may give way to the formation of new groupings. One Health is more about a specific approach to cooperation and working together than about excluding some scientific disciplines in general. Of course specific projects, research teams, etc. will require specific expertise.

Furthermore, the quality of the cooperation is crucial. According to one interviewee:

---

<sup>156</sup> United Nations, The World Bank, Animal and Pandemic Influenza, A Framework for Sustaining Momentum, Fifth Global Progress Report, July 2010, pp. 85, 95.

<sup>157</sup> *Ibid.*

<sup>158</sup> FAO, OIE, WHO, Joint scientific consultation on influenza and other emerging zoonotic diseases at the human-animal interface, “Meeting Summary and Key Findings”, Verona (Italy), 27-29 April 2010.

*Today, One Health (or whatever one calls it) means all things to all people. That is not helpful, and we need to move beyond just putting a name on “business as usual” operations. The OH paradigm, as we have tried to foster it, really requires a level of collaboration and cross-disciplinary respect that has generally not been the norm up to now.*

While the exact form One Health cooperation may take, and who should be involved in which groupings may be less an issue than how to make cooperation work, another dimension within One Health remains to be discussed: what does One Health cover in terms of diseases?

### **WHICH DISEASES? ONLY EMERGING INFECTIOUS DISEASES?**

One Health emerged as an effort to go beyond the avian influenza vertical approach (disease-focussed) to support a more horizontal approach (focussed on health systems). However a truly horizontal approach is always difficult to fund as it is seen as requiring too many resources. Therefore, the tendency has been to reduce One Health to a specific series of diseases. This required finding a solution which narrows down the scope of one health while keeping it large enough for the consensus to hold. As a result, discussions about what One Health covers in terms of diseases are currently taking place: is One Health focussing on health systems or specific diseases and which ones? Several options are supported by different majorities, and taken together, they provide a broader and more comprehensive understanding of One Health.

The “health systems” approach is supported by OIE, which is convinced that the solution to defeating emerging diseases is to invest in animal health systems. OIE developed a set of tools, the “PVS Pathway” (OIE Evaluation of Performance of Veterinary Services), which provide a qualitative evaluation of veterinary services, and a PVS Gap Analysis that is then used by countries and donors to support the improvement of animal health systems. These steps are followed by regular PVS Pathway follow-up missions to monitor progress made.<sup>159</sup> This way, it provides a feasible solution to support veterinary services. One of our interviewees also insisted

---

<sup>159</sup> “The new tool for the evaluation of performance of Veterinary Services (PVS Tool) using OIE international standards of quality and evaluation”,  
<[http://www.oie.int/eng/oie/organisation/en\\_vet\\_eval\\_tool.htm](http://www.oie.int/eng/oie/organisation/en_vet_eval_tool.htm)>, last accessed 4 January 2011.

that One Health's "focus must be on Health not on Disease", and that this was what made it a "paradigm change".

Many other actors prefer an approach focussing on diseases, be they infectious diseases, zoonoses, emerging diseases, and even, in more marginal cases, non communicable diseases (like cancer). The proponents of reducing One Health to a few infectious diseases insist that it will ease collaboration and give a sense of focus to cooperation.<sup>160</sup>

One commonly accepted approach adopted by the World Bank to include both states like the US, concerned by pandemics, and developing countries, more concerned by endemic diseases with a large human and economic impact, is to propose that One Health covers, "future pandemics [and] long-standing endemic diseases [...] that impose severe human and economic costs on the developing countries in which they persist."<sup>161</sup> Indeed, according to the World Bank, "Making one Health operational represents an extraordinary opportunity for convergence and synergy between the priorities of industrialized countries and those of developing countries."<sup>162</sup> However, this clear cut vision is not as clearly inscribed in other key documents and there is considerable debate within the World Bank on whether to include anything other than zoonoses.<sup>163</sup>

The strategic framework signed by FAO/OIE/UNICEF/UNSC/WHO and the World Bank also adopts an approach including future pandemics and long-standing endemic diseases, but less precise and at times confusing. It defines a specific range of action for the Framework itself: emerging (and reemerging) diseases "at the animal-human-ecosystem health interface, particularly those that are transboundary in nature and have the potential for wide-ranging impacts."<sup>164</sup> It also defines those diseases as "with significant transboundary socio-economic impacts",<sup>165</sup> "diseases of animal origin, including zoonoses and those with pandemic potential,"<sup>166</sup> or as impacting the poor.<sup>167</sup> Then it lists the following: "RVF [Rift Valley Fever], tuberculosis (TB), brucellosis, rabies, food and water-borne infections, FMD [Foot and mouth disease], ASF [African swine fever], contagious bovine pleuropneumonia (CBPP) and *peste des petits*

---

<sup>160</sup> Comment of a peer-reviewer: "Non-zoonotics [...] are not at the human-animal interface, and in the opinion of many in the Bank should not be included,"

<sup>161</sup> The World Bank, *op. cit.*, p. x.

<sup>162</sup> *Ibid.*

<sup>163</sup> Comment from a peer-reviewer.

<sup>164</sup> FAO, OIE, WHO, UNSC, UNICEF, The World Bank, *op. cit.*, p. 9.

<sup>165</sup> *Ibid.*, p. 17.

<sup>166</sup> *Ibid.*, p. 18.

<sup>167</sup> *Ibid.*, p. 20.

*ruminants* (PPR)”.<sup>168</sup> Zoonoses (diseases that impact both animals and human beings) are therefore included, as well as diseases that are not zoonotic (FMD, ASF, CPBB, PPR). Finally, the annex contains a “list of diseases of common interest,”<sup>169</sup> which is the list of the diseases taken care of by GLEWS, the global early warning and response system for major animal diseases, including zoonoses, of the FAO, OIE and WHO. It includes 25 diseases, 19 of which are zoonotic.

This confusion can be explained since the goal remains to strengthen public and animal health systems and not to target one specific disease. Furthermore, the three intergovernmental organisations (FAO, OIE, WHO) regard the zoonoses as part of their mandate and may not be willing to “share” the diseases with other organizations, even if, as all the three organisations do work on zoonoses, they have a strong and pragmatic incentive to cooperate. Moreover, having One Health focus on already-targeted diseases can be helpful for fundraising. Lastly, a focus on zoonoses excludes animal diseases that have a wide impact on livelihoods and that are of concern to FAO and OIE (like FMD). Therefore having One Health focussing only on zoonoses is a problem. It is more practical to focus on “emerging and reemerging diseases” (even if, or especially as this concept can be broadly used).

In 2010, those ambivalences seem to have settled a bit, and the Tripartite Concept Note of FAO/OIE/WHO declares to focus on: “animal and public health risks attributable to zoonoses and animal diseases with an impact on food security,” and in a less clear cut manner later mentions “health risks at the human-animal-ecosystems interfaces”.<sup>170</sup>

When I asked, “what are the diseases/health issues most concerned by One Health?”, answers varied. One gave a reply in line with the Strategic Framework:

*[Z]oonotics/emerging diseases are of high profile concern, but in fact diseases of economic importance at the wildlife/livestock interface that are not zoonotic are hugely important in terms of One Health priorities – foot and mouth disease is a classic case in point.*

One interviewee considered that most diseases require One Health cooperation, while at the other side of the spectrum, another insisted specifically on rabies and zoonotic vector-borne diseases (West Nile, Rift Valley Fever) rather than on all zoonoses. However most interviewees answered zoonoses (13 out of 16). Among the 13, two added food safety and food security, another added drug resistance issues, and a

<sup>168</sup> *Ibid.*, p. 29.

<sup>169</sup> *Ibid.*, p. 55.

<sup>170</sup> FAO, OIE, OMS, The FAO-OIE-WHO Collaboration..., *op. cit.*

third suggested, “any conditions that can be modified by agriculture production”. Among the “zoonoses” answers, one regretted that a wider range of issues is not taken into account (like food safety, animal as sentinels, etc.) and another proposed to include health issues that require “similar laboratory and service infrastructure, personnel and control options,” as well as well-being issues with regards to pets.

Among those interviewed at least, the dual vision of the Strategic framework concerning One Health’s mission in terms of diseases is not widespread. Beyond the variety of answers, One Health is seen as being mainly focussed on zoonoses rather than on “emerging diseases” or high-impact animal diseases. Furthermore, no interviewee insisted on health systems in their answers to this question.

One should note that there is a minority that also insists that One Health should include plant diseases.<sup>171</sup> Furthermore, even if it is rather marginal, One Health also refers, for some authors and researchers to more than just infectious diseases. It refers for example to noncommunicable diseases (psychology therapies thanks to pets, cancer treatments through comparative research between humans and animals, etc.), and to specific research methodologies (the use of animal models for research). Indeed, some experts consider that cancer is also an issue for One Health, and put forward the role of animals, like dogs, as sentinel for environmental pollution that can lead to cancer or lead poisoning; i.e., if the dog has cancer, there is a strong risk for the people living with him.<sup>172</sup> Furthermore, the study of dog cancers is found to be useful for research on human cancers.

However, this enlargement of One Health is not supported by everybody. According to one interviewee:

*Many colleagues working e.g. on experimental animals models for human diseases claim that they are working on One Health. I think there needs to be a more clear understanding of the terminology. At the moment it is abused to attract money and not for the sake of end-users.*

The meaning of One Health can therefore be more precisely defined by the analysis of its relationships with similar concepts, and by underlining the areas where the consensus spreads thin: what are the professional groups involved in One Health?

---

<sup>171</sup> The position of France on One Health seem to be including plant diseases (interview, 2010). See also J. Fletcher, D. Franz, J.E. LeClerc, “Healthy plants: necessary for a balanced ‘One Health’ concept”, *Veterinaria Italiana*, vol. 45, n° 1, pp. 79-95.

<sup>172</sup> Thomas P. Monath, “One Medicine/One Health”: Personal Reflections of a True Believer”, <http://www.onehealthinitiative.com/publications/ONE%20Health%20ICEID%20Mar08Final%20tpm.pdf>, last accessed 16 December 2010.

How wide should the cooperation be? And what is the object of One Health: health systems, emerging diseases, or zoonoses, etc.?

In fact, one can almost see two sides opposing each other within One Health: on one side, a very concrete and operational insistence on the need for animal and human health to cooperate together to control zoonoses, and on the other side a much wider approach, more theoretic and at times also ideological, focussed on the relationship between health and the environment and probably more difficult to operationalise.<sup>173</sup>

One Health is indeed an umbrella for different visions. Those differences matter because they make sense of the approach: they show how various actors comprehend One Health and apply it. But they are not strong enough to break the consensus supporting One Health. For example, it is useful to know that, for some actors, One Health is also about plant health. This means that some cooperation will be developed in that sector in the name of One Health. Such variations do not significantly alter the consensus around One Health: they only offer different visions or meanings under the larger One Health umbrella.

---

<sup>173</sup> Comment from a peer-reviewer.

## IMPLEMENTING ONE HEALTH

There are three faces of One Health, one is revealed by the play of actors, and the second is highlighted by the inherent discrepancies in how One Health is defined and conceived. A third face is defined by looking at how One Health is or could be implemented. According to the World Bank, “While a broad consensus exists with regard to the merits of One Health approach, the question of how to make it operational raises a variety of issues.”<sup>174</sup>

I consider that this question concerning the operationalisation is not fully adequate. One Health exists and is implemented as long as someone does something in its name, or within the framework drafted in the first two actor- and concept-based parts. In the same process, One Health exists, and takes a specific form (the “real” One Health) as it is implemented. Of course, One Health could be more fully implemented in many countries, and what I describe here blends description of existing implementation and normative prescriptions about how OH could be put into practice.

Interestingly, when asked whether they had applied the One Health approach in their work/projects, only one of our interviewees answered no. The others considered that they applied it through their cooperation with medical professionals (and environmental experts) in dealing with zoonoses (3); through specific diseases control programmes (for example, brucellosis in Palestine, rabies and other zoonoses in Kenya,<sup>175</sup> assessment of zoonoses and potential for joint services to facilitate vaccination, laboratories, etc., and through provision of social services including health, education, information, etc. with joint human and animal vaccination programmes) (4); through One Health NGO programmes (1); through research projects involving both “medics and vets” (2); through comprehensive research (“studying all the hosts involved in the transmission of infections”); or through research dealing with One Health – Andreas Meisser wrote a master’s thesis (MPH) on

---

<sup>174</sup> The World Bank, *op. cit.*, p. 5.

<sup>175</sup> J.M. Kagira, P.W.N. Kanyari, “The role of veterinary and medical personnel in the control of zoonoses in urban settlements on the shores of Lake Victoria, Kenya”, *Kenya Sci. Parasitol.*, vol. 11, n° 2, June 2010, pp. 61-66.

“Evaluating the potential of a mutual ‘One Health’ strategy for Switzerland”. For all of them, One Health is a reality they implement every day.

I propose here to recall how the One Health approach has been implemented through the years even when the concept itself did not exist. I will then turn to specific areas of action where One Health has been or could be better applied.

## **HISTORY OF THE APPROACH**

*There are several “grand-fathers” of One Health: medical doctors and veterinarians whose work prefigured what One Health would be. At least three forefathers of One Health proved that they could produce exemplary work by going beyond the traditional barriers between human medicine and veterinary medicine. One of them is the physician Rudolf Virchow (1821-1902),<sup>176</sup> who coined the term “zoonosis” and is famously known for having said that “between animal and human medicine there are no dividing lines – nor should there be.”<sup>177</sup>*

The physician William Osler (1849-1919) “established veterinary pathology as an academic discipline in North America”.<sup>178</sup> More recently, Calvin Schwabe (1927 – 2006), “known as the father of veterinary epidemiology”<sup>179</sup> coined the concept “One Medicine”.

One health is also about the teams of physicians and veterinarians who worked together to defeat diseases. For example, Theobald Smith and F.L. Kilborne, a physician and a veterinarian, discovered by working together that cattle fever was transmitted by tick vectors in 1893.<sup>180</sup> Karl Johnson, a physician, and Fred Murphy, a veterinarian, identified the virus ebola in October 1976.<sup>181</sup> Rolf Zinkernagel, a physician, and Peter Doherty, a veterinarian, got the Nobel Price for their work

<sup>176</sup> Zinsstag, J., et al., “From “one medicine” to “one health” and systematic approaches to health and well-being”, *PREVET*, 2010, doi: 10.1016/j.prevetmed.2010.07.003, p. 2.

<sup>177</sup> Bruce Kaplan, Laura H. Kahn, Thomas P. Monath, Jack Woodwall, “One Health and parasitology”, *Parasites and Vectors*, vol. 2, n° 36, 12 August 2009.

<sup>178</sup> Bruce Kaplan, Laura H. Kahn, Thomas P. Monath, Jack Woodwall, “One Health and parasitology”, *Parasites and Vectors*, vol. 2, n° 36, 12 August 2009.

<sup>179</sup> Philip H. Kass, Richard H. McCapes, William R. Pritchard, “In Memoriam”, <<http://www.universityofcalifornia.edu/senate/inmemoriam/calvinwschwabe.htm>>, last accessed 6 January 2011.

<sup>180</sup> Bruce Kaplan, Laura H. Kahn, Thomas P. Monath, Jack Woodwall, *op. cit.*

<sup>181</sup> Bruce Kaplan, Laura H. Kahn, Thomas P. Monath, Jack Woodwall, *op. cit.*



showing how the immune system distinguishes normal cells from virus-infected cells.<sup>182</sup>

This short historical summary recalls the most important feature of OH: multisectoral cooperation.

### **IMPROVING COORDINATION FOR A TRUELY COMPREHENSIVE APPROACH**

We saw that cooperation was key to the One Health approach: in the Stone Mountain meeting, one of the key points for One Health was said to be “improved coordination”.<sup>183</sup> Cooperation is not a new phenomenon,<sup>184</sup> and it is not an easy thing to achieve. For example, one of our interviewees did not believe in One Health because he saw it as a tool for human medicine to dominate veterinary medicine. However, judging from the results of the survey I did, and seeing as how all responses came from veterinarians, it may be easier to see One Health as a more geared towards veterinarians, and several interviewees lamented the fact that human health specialists were not more involved.<sup>185</sup> According to the World Bank, it is the “involvement of wildlife specialists”<sup>186</sup> that is too weak. Why is it that some professional groups get involved with and own One Health, while others do not?

During the peer-review of this report, this question was posed and one answer was that veterinarians “used to be doing One Health without knowing it. [When they heard about it] they recognized themselves in the message”<sup>187</sup>. It is therefore much easier for veterinarians to own and defend One Health as it is so close to their core missions (zoonoses, holistic vision of the disease seen in its environment, comparative medicine between several races of animals). Physicians, excluding those concerned with public health (who have had to deal with several zoonoses), may seem a bit at odds with an approach that requires them to take a more comprehensive approach to human health. On the contrary, for professionals in several different fields, One Health

---

<sup>182</sup> Bruce Kaplan, Mary Echols, “ ‘One Health’- The Rosetta stone for 21<sup>st</sup> century health and health providers”, *Veterinaria Italiana*, vol. 45, n° 3, p. 380.

<sup>183</sup> CDC, “Operationalizing ‘One Health’. A brief overview of the Stone Mountain meeting”, *op. cit.*, p. 2.

<sup>184</sup> *ResearchMediaLtd*, “Dr Laura Kahn, on the One Health Initiative”, *op. cit.*

<sup>185</sup> One interviewee considered that to implement One Health, one should “get in more contact with human doctors on the field to raise awareness for innovative approaches.” According to another: “the One Health principle is still more used by the veterinary sector and less by the medical sector. Sensibilisation of the medical sector is essential to promote the concept.”

<sup>186</sup> The World Bank, *op. cit.*, p. 20.

<sup>187</sup> Comment from a peer-reviewer.

may seem alien to their standard corpus of research and thinking, and extra communication efforts will therefore be required to “embed” them within the approach.

*It was often thought that institutional solutions were necessary in order to improve cooperation, though this does not imply the creation of new institutions. When asked how one should implement One Health, 15 of the 16 interviewees agreed to “put in place ‘One Health’ national strategies and coordination structures”. The fight against avian influenza and other zoonoses crisis like foot-and-mouth disease in the UK saw the creation of national coordinators and coordination structures, as the zoonoses group already presented. As underlined by the World Bank, “Public health and veterinary government authorities often only start cooperating when facing outbreaks of emerging zoonoses.”<sup>188</sup>*

I have already presented all the coordination structures existing between FAO/OIE and WHO, and new inter-institutional collaborations will arise naturally as opportunities emerge. Rather flexible and building on existing institutions, those coordination structures really contribute to an improved and more rapid communication between their members,<sup>189</sup> as well as an increased efficiency thanks to better transparency.

However, parallel to this flexible model of institutional change, one also finds a few proponents of radical bureaucratic change, interested, for example, in the creation of new united structures. Not only is their insistence on reform often unnecessary (as the existing institutions often work adequately) but they often forget that it is not easy to destroy and unite separate bureaucracies: such structures usually continue to exist within the new system and will resist cooperation even more adamantly. Radical bureaucratic change is also very destructive and will decrease the organisation’s capacity to manage crisis, which may prove dangerous for the management of emerging diseases. One should also be wary of creating new institutions as they often create more cooperation difficulties by adding a new player to the game.<sup>190</sup>

The position of the European Commission in this regard is interesting: they insist that collaboration should be done in full respect of the sectors/disciplines/institutions cooperating. For example, according to James Moran, then Director for Asia, DG

---

<sup>188</sup> Jakob Zinsstag, Esther Schelling, Bassirou Bonfoh, et al., “Towards a ‘one Health’ research and application tool box”, *Veterinaria Italiana*, vol. 45, n° 1, p. 124.

<sup>189</sup> The World Bank, *op. cit.*, p. xiii.

<sup>190</sup> According to one of our interviewees, “no new structures should be created – this would be very contradictive to the main thought of capitalizing on synergies.”

External Relations of the European Commission, in his videotransmitted opening speech for IMCAPI Hanoi, “An increased and improved collaboration between sectors and disciplines is absolutely essential, in full respect of the autonomy and self-management of all of them.”<sup>191</sup> This being said, some lessons can be taken from our experiences with coordination mechanisms. They work better when they benefit from direct high-level political support. This is what the World Bank meant when they wrote that in the HPAI cases<sup>192</sup>:

*“the best functioning National Steering Committees are those chaired by the president’s or prime minister’s office, so that a top-down command structure exists which can, in case of outbreak emergencies, issue direct orders with authority to the lower levels and expect to have these complied with forthwith.”*<sup>193</sup>

An important factor to promoting collaboration is joint funding. This worked very well in the UK with a global conflict prevention pool set up to promote the cooperation between the ministries of defence, development and foreign affairs. The World Bank proposed to use shared budget lines and “systems of matching grants, with increased cooperation leading to increased budgetary support”.<sup>194</sup> However this should only target supplementary funding (and work as a carrot) rather than basic funding for health services, as this could weaken them.

What also proves useful is to exchange staff between two organisations, to designate focal points and to organise clearing house meetings, where actors meet in an informal setting to exchange information about emerging diseases. Furthermore, the two coordinator and coordination group models<sup>195</sup> are both useful, but the coordinator

---

<sup>191</sup> <[http://www.cdc.gov/onehealth/pdf/atlanta/alain\\_vandersmissen.pdf](http://www.cdc.gov/onehealth/pdf/atlanta/alain_vandersmissen.pdf)>, last accessed February 9, 2011.

One could also quote Alain Vandersmissen, in IMCAPI Hanoi, in his Conclusions on the Way Forward of his presentation of the results of the Outcomes and Impact Assessment of the GRAI:

“Cross-sectorality is about reinforcing each sector or sub-sector potentially related to the prevention of and response to major, often unpredictable health hazards, in full respect of the specific expertise and organisation of each sector. This applies particularly to capacity building of public health and veterinary services. Both should be strong, autonomous and well-governed, as a basis for a peer-to-peer collaboration”.

<sup>192</sup> According to a peer-reviewer, this was not the case with HIV/AIDS., where high level coordination did not result in better performance.

<sup>193</sup> B. Brandenburg, “The World Bank Global Program for Avian Influenza: Animal and Human Influenza Portfolio Review”, July 2008. Quoted in: The World Bank (Agriculture and Rural Development. Health, Nutrition and Population), *People, Pathogens and Our Planet. Volume 1: Towards a One Health Approach for Controlling Zoonotic Diseases*, Report n° 50833-GLB, 2010, p. 30.

<sup>194</sup> The World Bank, *op. cit.*, p. xiv.

<sup>195</sup> Like permanent coordination mechanisms, permanent inter-departmental task force, One Health teams. See: The World Bank (Agriculture and Rural Development. Health, Nutrition and Population),

needs to be the real decision-maker (for example in France, the avian influenza coordinator has been the head of the Health Directorate General of the Health Ministry) and have a narrowly defined field of involvement. If the coordinator cannot be such a decision-maker, it is better to have administrative heads in charge rather than coordinators (for example with a rotating chair of the coordination group). However this may require, as recommended by an interviewee, the strengthening of the veterinary and medical public health heads of units. That being said, advisory committees may mobilise a collegial rather than hierarchic and bureaucratic decision-making process, which implies that more important than reaching rapid decisions, their goal is to allow for all contributing experts to be heard and taken into account.

Whether a hierarchic or collegial type of coordination, what is important is to put in place a concrete and operational process that requires cooperation and collective decision-making. This may, for example, include defining hot spots for risk analysis. Hot spots are “contexts in which climatic, social, and economic conditions – including the state of sanitation infrastructure and services and the proximity of humans and animals – provide a particularly favourable environment for diseases to emerge or re-emerge within.”<sup>196</sup> Other examples of team-building work may include the production of INAPS (integrated national action plans), joint planning exercises, or simulation exercises (joint preparedness planning). Such processes enforce habits conducive to working together, which facilitate mobilisation in crisis situations.

Finally, it is important to mention one innovation; the One Health Hubs or centres of excellence in epidemiology in seven South-Asian countries.<sup>197</sup> These centers should be put in place thanks to a programme funded by the Avian and Human Influenza Facility of the World Bank, and only time will tell if this new attempt will live up to its expected potential.

---

*People, Pathogens and Our Planet. Volume 1: Towards a One Health Approach for Controlling Zoonotic Diseases*, Report n° 50833-GLB, 2010, p. xiv; FAO, OIE, WHO, UNSIC, UNICEF, The World Bank, *op. cit.*, p. 36.

<sup>196</sup> The World Bank, *op. cit.*, p. xiii.

<sup>197</sup> United Nations, The World Bank, *op. cit.*, p. 96; <[www.onehealth.org.nz/index.php/one-health-hubs](http://www.onehealth.org.nz/index.php/one-health-hubs)>, last accessed 6 January 2011.

*As one interviewee said regarding cooperation, “there is always room for improvement, even if we saw improvement in the past 30 years [and also compared to when we] first had avian influenza.”*

There are several paths to improving cooperation, be they formal or informal, but what is always necessary is the will to cooperate from all concerned parties as well as from political leadership.

## **STRENGTHENING HEALTH SYSTEMS**

One Health is about improving cooperation, but it is also about improving both veterinary and human health systems. Those systems should respect International Health Regulations (IHR) 2005 and OIE standards.<sup>198</sup> But more empirically, One Health implies a continuation and strengthening of pandemic preparedness effort, prevention, detection and the control and response efforts.<sup>199</sup> It is about prevention at the animal source to fight factors leading to emergence.<sup>200</sup> Improving surveillance is continuous work, and in the animal diseases field, efforts are permanently directed towards harmonizing surveillance systems from national to regional and global levels.<sup>201</sup> Prevention also means biosecurity in all farms and control requires socio-economic incentives.<sup>202</sup>

One of the actors insisting on health systems strengthening is the European Commission. The EC has repeatedly emphasized this point in policy statements made at the Hanoi IMCAPI and in various other fora. The Commission focuses on strengthening veterinary and public health services with due respect to the autonomy and self-governance of each discipline.<sup>203</sup>

---

<sup>198</sup> OIE Terrestrial Animal Health Code, the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, the Aquatic Animal Health Code and Manual of Diagnostic Tests for Aquatic Animals and the OIE International Standards on Quality of Veterinary Services

<sup>199</sup> United Nations, The World Bank, *op. cit.*, pp. 95-100.

<sup>200</sup> Chatham House, “Addressing Pandemic Disease Threats, Shifting the focus from emergency response to prevention at the source”, Summary of discussions at the Chatham House Seminar “Strengthening Collaboration between Wildlife, Livestock and Human Health Sectors”, 16-17 March 2010, p. 2, <<http://www.cdc.gov/onehealth/pdf/atlanta/chatham.pdf>>, last accessed 10 February 2010.

<sup>201</sup> Interview with X, OIE, 30 November 2010.

<sup>202</sup> FAO, OIE, WHO, UNSIC, UNICEF, The World Bank, *op. cit.*, p. 30-31. However, according to one peer-reviewer, one should note that biosecurity is a costly process and one question is who should pay for it.

<sup>203</sup> Comment by one of the peer-reviewer.

*The first step to supporting health systems is to perform an assessment of needs. According to the CDC, we need, “country level self-assessment methods to identify programmatic areas that could benefit from a One Health approach and areas for targeting improvement.”<sup>204</sup>*

This is already what OIE does for the animal health systems with the PVS pathway, which includes the PVS Gap Analysis and is used as a support to raise funding for veterinary services. More than 100 countries requested PVS in January 2011 and 60 requested PVS Gap Analyses.<sup>205</sup> Such processes could also be put in place by national public health authorities in a less systematic way, through an assessment of their needs and priorities. However, the assessment alone is not sufficient if it does not lead to increased funding and improvement of the health systems. With the PVS Pathway, OIE managed to help national veterinary authorities raise funding and improve their services.

Other approaches may be riskier for the health services. While mobilising One Health for fundraising, a donor like the World Bank may at times see opportunities for saving, for example, by promoting shared facilities. According to the WB,

*“Sharing facilities such as transport and cold storage, once the risk of cross-contamination is addressed, can greatly enhance surveillance capacity and result in significant economies of scale.”<sup>206</sup>*

This kind of approach should only be seen as complementary to a larger investment in health systems, however difficult locating such an investment may prove in a situation of economic crisis. Furthermore it must be fully adapted to the reality of the country involved, rather than implemented in an ideological way: such economies of scale may only work in some very specific countries and for very specific projects. The joint BSL4 laboratory in Winnipeg, Canada, for example, is a very demanding project that should not be reproduced in developing countries.<sup>207</sup>

One needs to highlight the interest of some initiatives in remote rural areas where the limited population and available funding makes it necessary to come up with innovative ways to provide for the health of both humans and animals. This was, for instance, the case with the campaign to vaccinate both cattle and humans in Chad, a

---

<sup>204</sup> CDC, “Operationalizing ‘One Health’. A brief overview of the Stone Mountain meeting”, *op. cit.*, p. 2.

<sup>205</sup> “Country PVS and PVS Gap Analysis requests since 2006”.

<sup>206</sup> The World Bank, *op. cit.*, p. xiv.

<sup>207</sup> For a critique of such economies of scale, see A. Dehove, “One World, One Health”, *Transboundary and Emerging Diseases*, vol. 57, n°1, April 2010, p. 5.

project which increased vaccination of human beings and decreased the cost of the vaccination.<sup>208</sup> In the northern part of Mali, two NGOs, *Agronomists and Veterinary without borders* (AVSF) and *Médecins du Monde* (MDM) set up small joint medical teams (each with a nurse, a vaccinator, a veterinarian and a representative from the community) to take care of humans and animals in nomadic communities.<sup>209</sup>

Strengthening the health systems within the One Health approach may therefore require very different strategies, but none should be transposed from one country to the next without being carefully examined, as the objective should remain the strengthening of the systems and not the economies of scale.

## **EDUCATION & RESEARCH**

During the Stone Mountain meeting, education also emerged as central to One Health. Indeed, the participants agreed that One Health required “cultural change” and “appreciation for the importance of the connection between humans, animals and ecosystems”.<sup>210</sup> They also put in place two related working groups – one for *training*, and the other for *capacity building* – as both were seen as “critical enabling initiatives”.<sup>211</sup>

As demonstrated in Laura Kahn’s presentation at the Stone Mountain meeting on her One Health courses at the Mount Sinai of Medicine and Princeton University,<sup>212</sup> One Health is already giving way to several initiatives in education and research. Courses exist, even if I am unable to evaluate their quality. For example, the One Health Centre of Expertise of the University of California offers a course on One Health. Nonetheless, those limited experiences cannot replace a much more thorough change of academic curriculum with systematic exchanges between veterinary and human medicine universities to develop a real culture of cooperation.

On the research side, new research institutions have been created and new research programmes have promoted cooperation between human and animal health

<sup>208</sup> E. Schelling, M. Bechir, M.A. Ahmed, K. Wyss, T.F. Randolph, J. Zinsstag, “Human and animal vaccination delivery to remote nomadic families, Chad”, *Emerging Infect.Dis.*, 2007, vol. 13, n° 3, pp. 373-9; The World Bank, *op. cit.*, p. 23.

<sup>209</sup> IRIN, “Mali : Dans le Nord, médecins et vétérinaires travaillent ensemble”, 23 septembre 2010.

<sup>210</sup> CDC, “Operationalizing ‘One Health’. A brief overview of the Stone Mountain meeting”, *op. cit.*, p. 2.

<sup>211</sup> CDC, “Operationalizing ‘One Health’. A brief overview of the Stone Mountain meeting”, *op. cit.*, p. 2, 3.

<sup>212</sup> Laura Kahn, “Implementing One Health: An Academic Perspective”, CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, “Operationalizing “One Health”: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 4-6 May 2010.



institutions. For example, the OIE created the OIE Collaborating Centre University of Pretoria, whose focus is “integrated disease management at the wildlife / livestock/ human interface, which embraces the 'One Health' concept”.<sup>213</sup> Another creation was the SACIDS, the Southern African Center for Infectious Disease Surveillance, whose motto is “working towards One Africa, One Health”. It is a virtual center based on African networks of institutions involved in infectious diseases, cooperation between WHO/FAO/OIE, and “African smart partnerships with UK and other science centres”.<sup>214</sup>

At least five research programmes (among certainly many others)<sup>215</sup> can be considered to be in line with the One Health approach. One is now over, the Med-Vet-Net, a “virtual institute” integrating 16 European partners from both public health and veterinary sectors from 2004 to 2009 with funding from the European Union Sixth Framework Programme.<sup>216</sup> Another programme, EDEN, Emerging Diseases in a Changing European Environment, is building on the involvement of 49 partners and 80 teams with an integrative approach. The programme studies the vectors emergence to provide “tools to predict epidemiological risks” and is funded by the Research DG of the European Commission.<sup>217</sup> The “Ecosystem Approaches to the Better Management of Zoonotic Emerging Infectious Diseases in the Southeast Asia Region”, or EcoZEID project of ILRI uses an ‘ecohealth’ framework to link, work with, and build capacity in multi-disciplinary research groups on emerging infectious diseases in six pilot countries: Cambodia, Indonesia, Lao PDR, Thailand, Viet Nam and China, and will do so until 2012.<sup>218</sup>

---

<sup>213</sup> “OIE Collaborating Centre for Training in Integrated Livestock and Wildlife Health and Management”, <<http://web.up.ac.za/default.asp?ipkCategoryID=13398>>, last accessed 6 January 2011.

<sup>214</sup> A.S. Mweene, “Challenges to the implementation of the One Health approach in Southern Africa (SACIDS)”, 7 September 2009, <<http://www.rr-africa.oie.int/docspdf/en/2009/VSB/MWEENE1.PDF>>, last accessed 6 January 2011; SACIDS website, <<http://www.sacids.org/frontend/>>, last accessed 6 January 2011.

<sup>215</sup> One should note for example the existence of the One Health Network, a three year project funded by the Belgian Development Cooperation between the Institute of Tropical Medicine of Antwerp, the Department of Veterinary Tropical Diseases - University of Pretoria, and the Centro Internacional de Zoonosis - Universidad Central del Ecuador, <<http://www.onehealthnet.be/index.html>>, last accessed 7 January 2011.

<sup>216</sup> T. Belcher, D.G. Newell, “Crossing the boundaries”, *The Veterinary Record*, 26 November 2005, pp. 682-684; Med-Vet-Net, “Building a European Community to Combat Zoonoses”, 2009.

<sup>217</sup> EDEN, Emerging Diseases in a Changing European Environment, “An integrated project to predict the risk of vector-borne diseases”, <[http://ec.europa.eu/research/conferences/2009/rtd-2009/presentations/press/briefing\\_15\\_environment/fiche\\_edén-plaket\\_a4-gb-v8double.pdf](http://ec.europa.eu/research/conferences/2009/rtd-2009/presentations/press/briefing_15_environment/fiche_edén-plaket_a4-gb-v8double.pdf)>, last accessed 6 January 2011.

<sup>218</sup> <<http://www.ilri.org/EcoZd>>, last accessed 14 February 2011.



It is also important to mention the WHO/DFID/EU initiative on “Integrated control of neglected zoonoses: improving human health and animal production through scientific innovation and public engagement” (FP7-KBBE-2007-2A) - an ICONZ project involving 22 partners from the EU and Africa.<sup>219</sup> It is funded by the EU 7th framework. After the initial meeting in Geneva in 2005 that called for working “towards ‘one health’ systems”,<sup>220</sup> a second meeting was held in Nairobi in 2007 involving a broad stakeholder group made up of members from different ministries (it recommended that the New Delhi IMCAPI conference extend its scope beyond avian influenza to include zoonoses, an action already taken by the EU<sup>221</sup>), and finally a third meeting was held at the WHO headquarters in Geneva in November 2010.

Also worth noting, in 2006, the Health for Animals and Livelihood Improvement (HALI)

*“was initiated to test the feasibility of the One Health approach to rural Tanzania and to find creative solutions to these problems by investigating the impact of zoonotic disease on the health and livelihoods of rural Tanzanians living in the water-limited Ruaha ecosystem.”<sup>222</sup>*

These research subjects and others will soon benefit from access to a new publication allowing them to announce their results, the *One Health Journal*, a quarterly starting in 2011 and supported by Laura Kahn.<sup>223</sup> We may then better realise how widespread One Health research has in fact been in the recent years.

The taking into account of the One Health approach by research and education may slowly result in the incorporation of One Health themes in both veterinary education and medical training.<sup>224</sup>

---

<sup>219</sup> <<http://iconzafrica.com/>>, last accessed 11 February 2011.

<sup>220</sup> “The Control of Neglected Zoonotic Diseases”, Report of a Joint WHO/DFID-AHP Meeting with the participation of FAO and OIE, Geneva, 20 and 21 September 2005, <[http://www.who.int/zoonoses/Report\\_Sept06.pdf](http://www.who.int/zoonoses/Report_Sept06.pdf)>, last accessed 11 February 2011.

<sup>221</sup> <[http://www.who.int/zoonoses/recommendations\\_ControlNeglectedZoonoses2007.pdf](http://www.who.int/zoonoses/recommendations_ControlNeglectedZoonoses2007.pdf)>, last accessed 11 February 2011.

<sup>222</sup> J.A.K. Mazet, D.L. Cliffor, P.B. Coppolillo, et al., “A ‘One Health’ Approach to Address Emerging Zoonoses: the HALI Project in Tanzania”, *PLoS Medicine*, vol. 6, n° 12, December 2009, p. 2.

<sup>223</sup> Laura Kahn, “Implementing One Health: An Academic Perspective”, CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, “Operationalizing ‘One Health’: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 4-6 May 2010.

<sup>224</sup> Comment from a peer-reviewer.

## COMMUNICATION

*On the side of cooperation and education, the Stone Mountain meeting considered that one of the key points for One Health is “increased visibility”.<sup>225</sup> One of our interviewees explained that, “Communication and understanding is key here. [...] given the low visibility of those approaches, it is difficult to get funded, leading to low visibility and vicious circle.”*

Another insisted that, “success needs more publicity!” But according to a peer-reviewer of this report, the major problems with launching OH to society-at-large is that there is no agreement on the “true concept” to communicate in journals, newspapers, magazines and websites in order to gain popular buy-in (e.g., people have little knowledge about viruses and how they spread). This means that a lot of “awareness” about One Health has to be raised.<sup>226</sup> The context of the economic crisis may also have proved untimely for communication on One Health.<sup>227</sup>

When asked how to implement the One Health approach, the statement “organize more events, more communication to spread the idea” was supported by 14 of 16, with two not answering. One commented that, even if he supported the idea, it would prove “difficult to achieve anything lasting.” We have seen that events are already organized on a regular basis, and that they have played an important role in spreading the One Health idea to a larger audience worldwide. Indeed, when asked where they first heard of One Health, a third replied with the precise name of a specific event.<sup>228</sup>

The question remains, however, to know which audience one hopes to reach. As an interviewee commented, there are “two different audiences: the professional audience and the general public.” The experts working on zoonoses are familiar with the One Health approach, but it was tough to spread the idea beyond those expert circles, to touch general practitioners, veterinarians, or, with even greater difficulty, the general public. As I explained in the introduction, no social science expert I spoke to had heard of the approach.

*Touching those circles may not be crucial for the life of the approach, as long as academic institutions and emerging diseases experts start to own and implement*

---

<sup>225</sup> CDC, “Operationalizing ‘One Health’. A brief overview of the Stone Mountain meeting”, *op. cit.*, p. 2.

<sup>226</sup> Comment from a peer-reviewer.

<sup>227</sup> *Ibid.*

<sup>228</sup> AVMA meeting, FVE general assembly in Brussels, presentation of Prof. Jakob Zinsstag, Conference of theWorld Association for the Advancement of Veterinary Parasitology (Ghent, 2007), ILRI (2007). I received the information from someone who attended the OWOH conference in 2004.

*it, even if, according to one of our interviewees, one should “Talk about ‘One Health’ with your colleagues, with your teachers, with your students, at conferences, in the media...wherever and whenever.”*

Indeed one can welcome the creation of the *One Health Journal* as an arena for One Health experts to exchange information, as well as the Information Clearing House proposed by the Stone Mountain meeting that should be created by May 2011.<sup>229</sup> The same meeting decided on the development of a “Proof of concept” to contribute to communication in favour of One Health.<sup>230</sup> The *Journal* and the clearinghouse will certainly provide long lasting tools for data exchange and communication about One Health.

One Health could certainly be implemented more thoroughly but at least it already exists as decision-makers, researchers, programmes and projects put actions in place under the One Health banner. The third face of One Health may be less easy to trace as the implementation process is incomplete, but it implies cooperation, strengthening of the health systems, research and education, and improved communication. In all of these domains it is possible to delineate actions taking place.

---

<sup>229</sup> CDC, “Operationalizing ‘One Health’. A brief overview of the Stone Mountain meeting”, *op. cit.*, p. 2.

<sup>230</sup> CDC, “Operationalizing ‘One Health’. A brief overview of the Stone Mountain meeting”, *op. cit.*, p. 3.

# CONCLUSION

## ***THE EMERGENCE OF AN UMBRELLA APPROACH***

I have illustrated how the One Health approach emerged at the conjunction of the mobilisation of three categories of actors. International organisations (IO) owned the approach to make sense of their own cooperation efforts and to build on the experience gathered during the global governance of avian influenza, a position that legitimised and funded their central role in fighting the disease. To support OH, IOs signed two official documents that served as reference of their perspective of OH and put cooperation mechanisms in place among themselves. However, they did not engage in mass communication on OH. Indeed, it is grassroots organisations and researchers that spread the OH approach through seminars, events, publications, and network contacts. In doing so, they have developed an approach that legitimises and makes sense of their own research and collaborative efforts. Finally states have supported and owned the OH approach as a solution to prevent and control potentially threatening diseases. This took place through a very progressive process thanks both to international ministerial conferences and to institutional innovations put in place by some states.

Because so many actors have contributed to the emergence and development of One Health, the approach was bound to become an umbrella or even a banner, rather than a clear-cut concept. It is a flexible approach that can refer to the targeting of zoonoses only, or all diseases including plant diseases and cancer, or, even more broadly, entire health systems.<sup>231</sup> The variety of “owners” of One Health means that there is flexibility of meaning but it also resilience, as One Health is now part of the landscape defended by a broad alliance of actors that very likely will continue to spread.

---

<sup>231</sup> Even if, according to a peer-reviewer, “there is a danger for OH to become too broad, too general, too much of everything and too little of meaningfulness”.

## **NO DEFINITION BUT A MEANINGFUL CONCEPT**

One of our interviewees complained that, “One Health (...) means all things to all people. That is not helpful and we need to move beyond just putting a new name on ‘business as usual’ operations.” Three other interviewees also insisted on the need for a better definition of One Health, while on the contrary, one interviewee was concerned that such a definition would put an end to the fragile consensus that exists in favour of One Health. I do not pretend to offer a clear-cut definition of One Health, as I have preferred to try to make sense of it and show how it has become a consensual approach despite its unclear definition. One Health acts as an umbrella to protect innovative partnerships, collaborations, and research/surveillance/control programmes. Furthermore, the mapping of One Health’s “faces” (actors, variations in meaning, and implementation) draws a vision of One Health that is clear and more or less consensual. One Health may not prove to be the “the ‘Rosetta stone’ for a health enlightening paradigm shift revolution,”<sup>232</sup> but it is not “a wooly concept” either, as expressed by one of our interviewees.

One Health is a very ambitious and enticing approach because it can be practiced in very different ways, either in its totality or with a focus on specific aspects (e.g. zoonoses).<sup>233</sup> Accepting to narrow down and freeze the approach through one single definition (presuming this was possible) implies that it could become a less consensual tool and this would create more conflict about objectives, goals, and owners. However, One Health still needs to raise support and be owned by different sectors, like the human health sector and the environmental sector, and certain countries that have resisted the approach up to now.

## **A CONSENSUAL AND IMPORTANT APPROACH**

*What matters most is that One Health is considered an important approach (15 of 16 interviewees). When asked why One Health was an important approach to them, interviewees made varied answers and demonstrated the variety of interests characteristic of*

---

<sup>232</sup> Bruce Kaplan, Laura H. Kahn, Thomas P. Monath, Jack Woodwall, “One Health and parasitology”, *Parasites and Vectors*, vol. 2, n° 36, 12 August 2009.

<sup>233</sup> However, one peer-reviewer considers that “it is difficult to raise support and funds for OH when there is no concept to build action plans and other strategic collaborations.” But we disagree, the important issue is that the partners to a given project agree on the OH concept they are using as an umbrella for their cooperation.

*this subject. Some insisted that cross-sectoral cooperation was extremely important to them (4) and saw One Health as “a good way to communicate this objective”.<sup>234</sup> Some appreciated that One Health builds on different disciplines (1)<sup>235</sup> and that “it is essential to control some diseases that affect both humans and animals” (2). One even considered that, “it is the mechanism through which we work to catalyse change, to solve previously intractable problems at the wildlife health/domestic animal health/human health and livelihood interface, which is underpinned by the environment that sustains us all.”*

Several insisted on the relationship between One Health and their personal work: a researcher insisted that his team “validated” One Health in the Sahelian countries and in Central Asia, while another put forward the fact that “it is my entire work at the moment”. Another interviewee put it nicely; “It transforms a dual burden into a dual benefit which makes it easier for alleviating poverty in a cost-effective way.” Other more marginal positions included that it was especially significant because it allowed optimisation of means and that One Health was a solution “for reinforcing our [the vets’] position” in a medical institute.

What matters is less why exactly they support One Health than whether or not they do. And in a similar way, the issue is less how one defines One Health but rather knowing whether or not everybody agrees on the same broadly defined core principles thereof. Nonetheless, I showed that beyond the varieties of shades in the visions of One Health, there is no gap that cannot be bridged.

## **FUNDING AND COOPERATION AS THE KEY ISSUES**

The problem of One Health may therefore be less a problem of definition and more a problem of funding. Raising funding to support the cooperation mechanisms between the five to six international agencies, and above all for the animal and human health systems, in a time of scarce budgetary capacities is complicated. One Health depends on funding, according to one interviewee. Esther Schelling and Jakob Zinsstag

---

<sup>234</sup> “I trust in the need for intersectoral collaboration for promoting health”; “I have worked my whole life in an Institute where both medical and veterinary departments were present. Although both were under the same roof, I must say that the interaction between medics and vets was very poor” ; “My whole professional life so far was dedicated to strengthen cooperation for a better health”.

<sup>235</sup> “It builds on a common pool of knowledge from anatomy, physiology, pathology and aetiology in all species”.

propose the implementation of a funding mechanism for One Health.<sup>236</sup> Several donors (the European Commission, USAID, DFID) have already started to finance One Health activities.<sup>237</sup> However, the process is slow and more funding needs to be made available to support the development of One Health.

Another issue is whether the cooperation at the interface can take hold in spite of the usual problems linked to cooperation. One Swiss interviewee of Andrea Meisser assumes that “it will not work”.<sup>238</sup> Indeed, it will prove a long process, as an interviewee said, “the necessary changes will not take place overnight.” It will also be crucial that human health and environment health specialists be more involved in One Health.

### ***OH: A SOFT GLOBAL HEALTH GOVERNANCE***

Finally one can draw from the three faces of One Health that OH, like avian influenza before it, gave rise to a specific form of soft global health governance. One Health shows that it is possible to manage emerging issues or diseases without creating new institutions or new laws. It is a soft governance that can be set aside tomorrow if the issue disappears, one that builds on existing institutions and capacities to create new ways to deal with the emerging issue. OH relies in a way on a light footprint mobilisation system that is very decentralized. The tool used to convince actors to contribute is peer pressure or, more precisely, peer example. In this soft governance model, ideas replace laws, interests replace obligations, and consensus needs to be slowly built for actions to be undertaken. It is a fragile system because it relies heavily on cooperation and it is not sustained by any specific dedicated institution. It is, however, also a robust system thanks to the strong interests that support the emergence of the new governance (without which, such new governance would not emerge). It is also robust due to the broad consensus on the legitimacy of the issue. The comprehensive agenda for action, promoted by the international ministerial conferences, creates a fluid and smooth environment for precise actions to be taken when a disease emerges or health systems need to be strengthened even before the threat of a pandemic. One Health has raised enough legitimacy (much thanks to the

---

<sup>236</sup> Esther Schelling, Jakob Zinsstag, “Why should Anyone Invest?... For it’s added value!”, CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, “Operationalizing ‘One Health’: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 4-6 May 2010.

<sup>237</sup> Interview with X, OIE, 30 November 2010.

<sup>238</sup> Andrea Meisser, “One Health. The potential of a closer cooperation between human and animal health in industrialized countries”, Ecohealth Conference, August 2010.

Hanoi Declaration) and can now act as the umbrella justifying all sorts of specific programmes (development, research, surveillance, prevention and control, etc.) that will give it more presence and impact in the global health domain.

However, as in any other soft governance setting, the development trend of One Health will continue to depend on how actors continue to practice and expand upon it. The year 2011 may therefore prove crucial for One Health, as we will start to see the results of the effort put in place following the CDC's Stone Mountain meeting. Moreover, the next international senior official meeting or ministerial conference will take place in Cancun and may give a new impetus to the One Health approach.



## ANNEX 1: INTERVIEWEES

David Allwright, Eikenhof Poultry Farms, Durbanville, South Africa.

Bonfoh Bassirou, Managing Director, Centre Suisse de Recherche Scientifique en Côte d'Ivoire, Abidjan.

Hélène Carabin, Associate Professor, University of Oklahoma, Health Science Center, USA.

Ottorino Cosivi, Coordinator, Veterinary Public Health, Director, PANOFTOSA, PAHO/WHO, Rio de Janeiro.

Pierre Dorny, Chairman of the Department of Animal Health, Institute of Tropical Medicine, Antwerp.

Stanny Geerts, Professor (retired), Institute of Tropical Medicine, Antwerp.

Kaspar Jörgen, Member of the Executive Board, Federal Veterinary Office, Bern.

John Kagira, scientist, Institute of Primate Research, Kenya.

Andrea Meisser, Research Associate, Swiss Tropical and Public Health Institute, Basel.

Steve Osofsky, Director, Wildlife Health Policy, Coordinator, AHEAD, Wildlife Conservation Society, USA.

Agnès Poirier, Ministère des Affaires Etrangères, Paris.

Jim Scudamore, Professor of Livestock and Veterinary Public Health, University of Liverpool.

Esther Schelling, Project Leader, Swiss Tropical and Public Health Institute, Basel.

Patrick Seruyange, Operations Officer, Livestock and Fisheries, Delegation of the European Union to Uganda, Kampala.

David Swayne, Laboratory Director, USDA, OIE, Paris.

Alain Vandersmissen, Coordinator of the External Response of the European Commission to the Avian Influenza Crisis.

Maria Vang Johansen, Professor in Parasitic Zoonoses, Faculty of Life Sciences,  
University of Copenhagen.

X, OIE.

## ANNEX 2: QUESTIONNAIRE

### One Health Questionnaire – October 2010

To be sent to: Aline Leboeuf, leboeuf@ifri.org, 00 33 1 40 61 60 30

Please feel free to request a phone interview to replace or complement this written questionnaire.

Name:

Function:

Institution:

Address:

Date:

Do you want to remain anonymous? Yes/No (if no, your answers quoted in the report will be attributed to you).

Do you know the concept “One Health”? Yes/No

When and where did you first hear about it?

What does it mean for you? What are the main dimensions of this concept?

Do you agree that it implies the following:

Better cooperation between doctors and veterinarians: Yes/No

Working at the interaction between human and animal health and the ecosystem:  
Yes/No

A new approach to global health governance: Yes/No

Comments:

How different is “One Health” from the concepts “One World One Health” or “One Medicine”?

Is “One Health” an important approach for you? Yes/No

Why?

Have you applied the One Health approach in your own work/projects? Yes/No

How?

What are the diseases/health issues most concerned by One Health?

What should be done to implement this new approach or concept?

Organize more events, more communication to spread the idea: Yes/No

Put in place "One Health" national strategies and coordination structures: Yes/No

Strengthen cooperation between international organization (WHO/FAO/OIE): Yes/No

Focus on specific diseases that develop at the interface between human/animal/environmental spheres: Yes/No

OTHER/COMMENTS:

Do you have any recommendations regarding One Health that should be taken into account?

## ANNEX 3: THE MANHATTAN PRINCIPLES ON “ONE WORLD, ONE HEALTH™”

“Recent outbreaks of West Nile Virus, Ebola Hemorrhagic Fever, SARS, Monkeypox, Mad Cow Disease and Avian Influenza remind us that human and animal health are intimately connected. A broader understanding of health and disease demands a unity of approach achievable only through a consilience of human, domestic animal and wildlife health - One Health. Phenomena such as species loss, habitat degradation, pollution, invasive alien species, and global climate change are fundamentally altering life on our planet from terrestrial wilderness and ocean depths to the most densely populated cities. The rise of emerging and resurging infectious diseases threatens not only humans (and their food supplies and economies), but also the fauna and flora comprising the critically needed biodiversity that supports the living infrastructure of our world. The earnestness and effectiveness of humankind’s environmental stewardship and our future health have never been more clearly linked. To win the disease battles of the 21st Century while ensuring the biological integrity of the Earth for future generations requires interdisciplinary and cross-sectoral approaches to disease prevention, surveillance, monitoring, control and mitigation as well as to environmental conservation more broadly.

We urge the world’s leaders, civil society, the global health community and institutions of science to:

1. Recognize the essential link between human, domestic animal and wildlife health and the threat disease poses to people, their food supplies and economies, and the biodiversity essential to maintaining the healthy environments and functioning ecosystems we all require.
2. Recognize that decisions regarding land and water use have real implications for health. Alterations in the resilience of ecosystems and shifts in patterns of disease

emergence and spread manifest themselves when we fail to recognize this relationship.

3. Include wildlife health science as an essential component of global disease prevention, surveillance, monitoring, control and mitigation.

4. Recognize that human health programs can greatly contribute to conservation efforts.

5. Devise adaptive, holistic and forward-looking approaches to the prevention, surveillance, monitoring, control and mitigation of emerging and resurging diseases that take the complex interconnections among species into full account.

6. Seek opportunities to fully integrate biodiversity conservation perspectives and human needs (including those related to domestic animal health) when developing solutions to infectious disease threats.

7. Reduce the demand for and better regulate the international live wildlife and bushmeat trade not only to protect wildlife populations but to lessen the risks of disease movement, cross-species transmission, and the development of novel pathogen-host relationships. The costs of this worldwide trade in terms of impacts on public health, agriculture and conservation are enormous, and the global community must address this trade as the real threat it is to global socioeconomic security.

8. Restrict the mass culling of free-ranging wildlife species for disease control to situations where there is a multidisciplinary, international scientific consensus that a wildlife population poses an urgent, significant threat to human health, food security, or wildlife health more broadly.

9. Increase investment in the global human and animal health infrastructure commensurate with the serious nature of emerging and resurging disease threats to people, domestic animals and wildlife. Enhanced capacity for global human and animal health surveillance and for clear, timely information-sharing (that takes language barriers into account) can only help improve coordination of responses among governmental and nongovernmental agencies, public and animal health institutions, vaccine / pharmaceutical manufacturers, and other stakeholders.

10. Form collaborative relationships among governments, local people, and the private and public (i.e.- non-profit) sectors to meet the challenges of global health and biodiversity conservation.

11. Provide adequate resources and support for global wildlife health surveillance networks that exchange disease information with the public health and agricultural animal health communities as part of early warning systems for the emergence and resurgence of disease threats.

12. Invest in educating and raising awareness among the world's people and in influencing the policy process to increase recognition that we must better understand the relationships between health and ecosystem integrity to succeed in improving prospects for a healthier planet.

It is clear that no one discipline or sector of society has enough knowledge and resources to prevent the emergence or resurgence of diseases in today's globalized world. No one nation can reverse the patterns of habitat loss and extinction that can and do undermine the health of people and animals. Only by breaking down the barriers among agencies, individuals, specialties and sectors can we unleash the innovation and expertise needed to meet the many serious challenges to the health of people, domestic animals, and wildlife and to the integrity of ecosystems. Solving today's threats and tomorrow's problems cannot be accomplished with yesterday's approaches. We are in an era of "One World, One Health" and we must devise adaptive, forward-looking and multidisciplinary solutions to the challenges that undoubtedly lie ahead."<sup>239</sup>

---

<sup>239</sup> <[http://www.oneworldonehealth.org/sept2004/owoh\\_sept04.html](http://www.oneworldonehealth.org/sept2004/owoh_sept04.html)>, last accessed 3 January 2011.

## BIBLIOGRAPHY

Ahmed, J. S., O. Sparagano and U. Seitzer, "One Health, One Medicine: Tackling the Challenge of Emerging Diseases", *Transboundary and Emerging Diseases*, vol. 57, n° 1, April 2010, pp. 1-2.

Aguirre, A. A. and G. M. Tabor, "Global Factors Driving Emerging Infectious Diseases", *Annals of the New York Academy of Sciences*, n° 1149, 2008, pp. 1-3.

American Medical Association House of Delegates, "Resolution 530 (A-07)", <<http://www.onehealthinitiative.com/publications/AMA%20Resolution%20530%20a-07-One%20Health-Final%206%2025%2007.pdf>>, last accessed 3 January 2011.

American Veterinary Medical Association, *One Health: A New Professional Imperative: Final Report of the One Health Initiative Task Force*, 2008, <[www.avma.org/onehealth](http://www.avma.org/onehealth)>, last accessed 6 December 2010.

Aylward, B. and M. Birmingham, "Eradicating pathogens, The human story", *BMJ*, vol. 331, 26 November 2005, pp. 1261-1262.

Atlas, Ronald, Carol Rubin, Stanley Maloy, Peter Daszak, Rita Colwell, and Barbara Hyde, "One Health – Attaining Optimal Health for People, Animals, and the Environment", *Microbe magazine*, November 2010, <<http://www.microbemagazine.org/index.php/09-2010-home/2760-one-health-attaining-optimal-health-for-people-animals-and-the-environment>>, last accessed 19 November 2010.

BBC, "FMD report: Outbreak's economic impact", 29 August 2001, <[http://news.bbc.co.uk/2/hi/uk\\_news/1515327.stm](http://news.bbc.co.uk/2/hi/uk_news/1515327.stm)>, last accessed 21 December 2010.

Beasley, V., "'One Toxicology', 'Ecosystem Health' and 'One Health'", *Veterinaria Italiana*, vol. 45, n° 1, pp. 97-110.

Belcher, T. and D.G. Newell, "Crossing the boundaries", *The Veterinary Record*, 26 November 2005, pp. 682-684.



Blake, A., M. Thea Sinclair, and G. Sugiyarto, "Quantifying the impact of foot and mouth disease on tourism and the UK economy", *Tourism Economics*, vol. 9, n° 4, 2003, pp. 449–465.

Burgos, S., "Emerging Zoonotic Diseases in a Changed World: Strategic Vision or Fire-Fighting", Letter to the Editors, *Transboundary and Emerging Diseases*, n° 57, 2010, pp. 465-467.

Burgos, S. and J. Otte, "Global Public Health and Transboundary Animal Diseases: Issues and Options, Approaches and Concerns", *Pro-Poor Livestock Policy Initiative. A Living From Livestock Research Report*, n° 10-02, April 2010.

Burgos, S. and J. Otte, "Managing the Risk of Emerging Diseases: From Rhetoric to Action", *HPAI Research Brief*, n° 22, 2010.

Burgos, S. and J. Slingenbergh, "FAO in One Health: Business Unusual", *One Health Newsletter*, vol. 3, n° 4, pp. 17-19.

Burgos, S. and J. Otte, "Animal Health in the 21st Century: Challenges and Opportunities", *Pro-Poor Livestock Policy Initiative. A Living from Livestock. Research Report*, n° 09-06, December 2009.

Cáceres, S. B. and M. J. Otte, "Blame Apportioning and the Emergence of Zoonoses over the Last 25 Years", Short Communication, *Transboundary and Emerging Diseases*, n° 56, 2009, pp. 375-379.

Cardiff, R. D., J. M. Ward and S. W. Barthold, "'One medicine-one pathology': are veterinary and human pathology prepared?", *Laboratory Investigation*, vol. 88, 2008, pp. 18-26.

Cates, Michael B., "Healthy Animals, Healthy People: Inextricably Linked", *Army Medical Department Journal*, July-September 2007, p. 4.

Capua, I. and G. Cattoli, "One Flu for One Health [letter]", *Emerg Infect Dis* [serial on the Internet], April 2010, <<http://www.cdc.gov/EID/content/16/4/719a.htm>>, last accessed 14 February 2011.

Cascio A., M. Bosilkovski, A. J. Rodriguez-Morales and G. Pappas, "The socio-ecology of zoonotic infections", *Clinical Microbiology and Infection*, vol. 17, n° 3, 2011, pp. 336–342.

CDC, "Operationalizing 'One Health'. A brief overview of the Stone Mountain meeting", <[http://www.cdc.gov/onehealth/pdf/atlanta/brief\\_overview.pdf](http://www.cdc.gov/onehealth/pdf/atlanta/brief_overview.pdf)>, accessed 15 November 2010.

CDC, Stone Mountain BACKGROUND DOCUMENT, “Operationalizing “One Health”: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 3/23/10 <<http://www.cdc.gov/onehealth/pdf/atlanta/background.pdf>>, accessed 15 November 2010.

CDC, “Operationalizing “One Health”: A Policy Perspective—Taking Stock and Shaping an Implementation Roadmap”, MEETING OVERVIEW, MAY 4–6, 2010, Stone Mountain, Georgia, <<http://www.cdc.gov/onehealth/pdf/atlanta/meeting-overview.pdf>>, last accessed 18 February 2010.

Chatham House, “Addressing Pandemic Disease Threats, Shifting the focus from emergency response to prevention at the source”, Summary of discussions at the Chatham House Seminar “Strengthening Collaboration between Wildlife, Livestock and Human Health Sectors”, 16-17 March 2010, p. 2, <<http://www.cdc.gov/onehealth/pdf/atlanta/chatham.pdf>>, last accessed 10 February 2010.

Davies, S. E., “What contribution can International Relations make to the evolving global health agenda?”, *International Affairs*, vol. 86, n° 5, 2010, pp. 1167-1190.

DEFRA, *Zoonoses Report*, 2003, <<http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/zoonoses/documents/reports/zoonoses2003.pdf>>, last accessed 4 January 2011.

Dehove, Alain, “OIE International Solidarity: General Overview. Need for better Veterinary Governance”, Second Global Conference of OIE Reference, Laboratories and Collaborating Centres, Paris, 21-23 June 2010, <[http://www.oie.int/eng/A\\_VETO\\_PARIS\\_2010/Abstract/Session%207/Session\\_7\\_1\\_Alain\\_Debove.pdf](http://www.oie.int/eng/A_VETO_PARIS_2010/Abstract/Session%207/Session_7_1_Alain_Debove.pdf)>, last accessed 23 December 2010.

Dehove, A., “One World, One Health”, *Transboundary and Emerging Diseases*, vol. 57, n° 1, April 2010, pp. 3-6.

Donaldson, L.J. and D.J. Reynolds, “Integrated working”, *The Veterinary Record*, 26 November 2005, pp. 680-681.

Donaldson, L.J. and D.J. Reynolds, “UK government collaborations to manage threats to animal and human health”, *BMJ*, vol. 331, 26 November 2005, pp. 1216-1217.

Du, Jian (Department of Animal Disease Surveillance, CADDC), “Two Zoonotic Diseases Surveillance & One Health in China”, CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, “Operationalizing “One Health”: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 4-6 May 2010.

EASAC, "Combating the threat of zoonotic infections", *EASAC Policy Report*, n° 8, May 2008.

*Ecohealth*, "Editorial, One Ocean, One Health", n° 1, 2004, pp. 211-212.

Elbe, Stefan, "Our epidemiological footprint: The circulation of avian flu, SARS, and HIV/AIDS in the world economy", *Review of International Political Economy*, vol. 15, n° 1, pp. 116-130.

European Commission (DG SANCO), "Une nouvelle stratégie de santé animale pour l'Union européenne (2007-2013) place sous la devise 'Mieux vaut prévenir que guérir'", COM 539 (2007).

FAO Media Centre, "Improved disease prevention in animal health could save billions of dollars, One Health approach to more efficiently combat new pathogens is gaining strength", 26 July 2010, <http://www.fao.org/news/story/en/item/44327/icode/>, last accessed 23 December 2010.

FAO-OIE-WHO, "A Tripartite Concept Note - Sharing responsibilities and coordinating global activities to address health risks at the animal-human-ecosystems interfaces - The FAO-OIE-WHO Collaboration (April 2010)", [http://www.oie.int/download/FINAL\\_CONCEPT\\_NOTE\\_Hanoi.pdf](http://www.oie.int/download/FINAL_CONCEPT_NOTE_Hanoi.pdf), last accessed 14 February 2011.

FAO, OIE, WHO, Joint scientific consultation on influenza and other emerging zoonotic diseases at the human-animal interface, "Meeting Summary and Key Findings", Verona (Italy), 27-29 April 2010.

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-Ecosystems Interface", *Consultation Document*, 14 October 2008.

Fletcher, J., D. Franz and J.E. LeClerc, "Healthy plants: necessary for a balanced 'One Health' concept", *Veterinaria Italiana*, vol. 45, n° 1, pp. 79-95.

Fidler, David P. and Lawrence 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.

Foresight, *Infectious Diseases: preparing for the future. Executive Summary*, Office of Science and Innovation, London, 2006.

FVE, "One Health: Healthy animals = Healthy people", 2010, [http://www.fve.org/news/publications/pdf/fve\\_new\\_one\\_health\\_leaflet\\_2010.pdf](http://www.fve.org/news/publications/pdf/fve_new_one_health_leaflet_2010.pdf), last accessed 23 November 2010.

GLEWS Agreement,  
<[http://www.oie.int/fileadmin/Home/eng/About\\_us/docs/pdf/GLEWS\\_Tripartite-Finalversion010206.pdf](http://www.oie.int/fileadmin/Home/eng/About_us/docs/pdf/GLEWS_Tripartite-Finalversion010206.pdf)>, last accessed February 9, 2011.

Gibbs, E.P.J., "Emerging zoonotic epidemics in the interconnected global community", *The Veterinary Record*, n° 157, 26 November 2005, pp. 674-675.

Gibbs, E.P.J., "'One World-One Health' and the global challenge of epidemic diseases of viral aetiology", *Veterinaria Italiana*, vol. 45, n° 1, pp. 35-44.

Halpin, Kim, Alexander D. Hyatt and Raina K. Plowright, "Emerging Viruses: Coming in on a Wrinkled Wing and a Prayer", *Clinical Infectious Diseases*, n° 44, 2007, pp. 711-7.

Hanoi International Ministerial Conference, "Animal and Pandemic Influenza: the Way Forward", "Hanoi Declaration", Vietnam, 19-21 April 2010, IMCAPI Hanoi 2010.

Harvey, H. A., Building Bridges to Protect Health: Enhanced Partnerships among Animal, Human, and Ecosystem Health Sectors in New Zealand, Fullbright New Zealand, August 2010.

van der Hoek, W., F. Dijkstra, B. Schimmer, et al., "Rapid communications. Q fever in the Netherlands: an update on the epidemiology and control measures", *Eurosurveillance*, vol. 15, n° 12, 25 March 2010, <<http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19520>>, last accessed 21 December 2010.

Institute of Medicine, National Academies, "Sustaining Global Surveillance and Response to Emerging Zoonotic Diseases", September 22, 2009, <<http://www.iom.edu/Reports/2009/ZoonoticDisease.aspx>>, last accessed February 2, 2011.

IRIN, "Mali : Dans le Nord, médecins et vétérinaires travaillent ensemble", 23 September 2010.

Indonesian Ministry of Health, Press release, "77th International Ministerial Conference in Hanoi Discussed Human, Animal and Environmental Health", <<http://www.depkes.go.id/en/index.php/news/press-release/666-77th-international-ministerial-conference-in-hanoi-discussed-human-animal-and-environmental-health.html>>, last accessed 4 January 2011.

Jardin, Mireille, Raphaël Billé et al., "Global Governance of Biodiversity: New Perspectives on a Shared Challenge", *Health and Environment Reports*, n° 6, December 2010, <<http://www.ifri.org/?page=detail->

[contribution&id=6368&id\\_provenance=88&provenance\\_context\\_id=13>](#), last accessed 5 January 2011.

Jones, K. E., N. G. Patel, et al., "Global trends in emerging infectious diseases", *Nature*, n° 451, 21 February 2008, pp. 990-993.

Kagira, J.M. and P.W.N. Kanyari, "The role of veterinary and medical personnel in the control of zoonoses in urban settlements on the shores of Lake Victoria, Kenya", *Kenya Sci. Parasitol.*, vol. 11, n° 2, June 2010, pp. 61-66.

Kahn, L. H., "Implementing One Health: An Academic Perspective", CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, "Operationalizing "One Health": A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap", 4-6 May 2010.

Kahn, L. H., "'One Medicine –One Health' Interview with Ronald M. David, President of the American Medical Association, 14 May 2008", *Veterinaria Italiana*, vol. 45, n° 1, pp. 19-21.

Kahn, L. H. and B. Kaplan, T. Monath, "'One Health' in Action Series: Nos 1-8", *Veterinaria Italiana*, vol. 45, n° 1, pp. 195-208.

Kalb, Claudia, "Animal Instincts", *Newsweek*, 27 April 2010, <[www.newsweek.com/2010/04/27/animal-instincts.print.html](http://www.newsweek.com/2010/04/27/animal-instincts.print.html)>, last accessed 21 December 2010.

Kakkar, Manish, (Public Health Foundation of India), "Roadmap to combat zoonoses in India (RCZI) Initiative", CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, "Operationalizing 'One Health': A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap", 4-6 May 2010.

Kamanzi, Jean, (Banque Mondiale, Agriculture and Rural Development), "Why should we invest in One Health?", CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, "Operationalizing "One Health": A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap", 4-6 May 2010.

Kaplan, Bruce, Laura H. Kahn, Thomas P. Monath and Jack Woodward, "One Health and parasitology", *Parasites and Vectors*, vol. 2, n° 36, 12 August 2009.

Kaplan, Bruce and Mary Echols, " 'One Health'- The Rosetta stone for 21st century health and health providers", *Veterinaria Italiana*, vol. 45, n° 3, p. 380.

Kaplan, Bruce, Laura H. Kahn and Thomas P. Monath, "The brewing storm", *Veterinaria Italiana*, vol. 45, n° 1, pp. 9-18.

Karesh, William B. and R. B. Cook, "The Human-Animal Link", *Foreign Affairs*, vol. 84, n° 4, July/August 2005, pp. 38-50.

Karesh, William B., Steven A. Osofsky, Tonie E. Rocke and Paul L. Barrows, "Joining forces to Improve Our World", *Conservation Biology*, vol. 16, n° 5, October 2002, p. 1433.

Klement, E., N. Shpigel, et al., "'One Health', from science to policy: examples from the Israeli experience", *Veterinaria Italiana*, vol. 45, n° 1, pp. 45-53.

Keogh-Brown, M. R. and R. D. Smith, "The economic impact of SARS: How does the reality match the predictions?", *Health Policy*, n°88, 2008, pp. 110–120.

Leboeuf, A., "The Global Fight Against Avian Influenza. Lessons for the Management of Health and Environmental Crises", *Health and Environment Reports*, n° 2, <[http://www.ifri.org/?page=detail-contribution&id=5261&id\\_provenance=103&provenance\\_context\\_id=13](http://www.ifri.org/?page=detail-contribution&id=5261&id_provenance=103&provenance_context_id=13)>, last accessed 21 December 2010.

Lee, Kelley and David P. Fidler, "Avian and pandemic influenza: Progress and problems with global health governance", *Global Public Health*, Vol. 2, n° 3, July 2007, pp. 215-234.

Mackenzie, J. S., H. E. Field and K. J. Guyatt, "Managing emerging diseases borne by fruit bats (flying foxes), with particular reference to henipaviruses and Australian bat lyssavirus", *Journal of Applied Microbiology*, vol. 94, n° Supplement s1, May 2003, pp. 59–69.

Marcotty, T., "The One Health concept in low resource countries: Literature review", April 2009, [www.onehealthnet.be/review1.html](http://www.onehealthnet.be/review1.html), last accessed 20 October 2010.

Mazet, J.A.K., D.L. Cliffor, P.B. Coppolillo, et al., "A 'One Health' Approach to Address Emerging Zoonoses: the HALI Project in Tanzania", *PLoS Medicine*, vol. 6, n° 12, December 2009, p. 2.

Meisser, Andrea, "One Health: The potential of a closer cooperation between human and animal health in industrialized countries", Ecohealth Conference, August 2010.

Meisser, A., E. Schelling and J. Zinsstag, "One Health in Switzerland: A visionary concept at the crossroads?", to be published, 2011.

Michel, B., "What could Dr Finlay and Mr Herriot learn from each other? Comparisons of humans and animal diseases can benefit patients of all species", *BMJ*, vol. 331, 26 November 2005, pp. 1220-1221.



Monath, Thomas P., "One Medicine/One Health": Personal Reflections of a True Believer",  
<<http://www.onehealthinitiative.com/publications/ONE%20Health%20ICEID%20Mar08Final%20tpm.pdf>>, last accessed 16 December 2010.

Monath, Thomas P., "One Medicine/One Health": Personal Reflections of a True Believer",  
<<http://www.onehealthinitiative.com/publications/ONE%20Health%20ICEID%20Mar08Final%20tpm.pdf>>, last accessed 16 December 2010.

Mweene, A.S., "Challenges to the implementation of the One Health approach in Southern Africa (SACIDS)", 7 September 2009, <<http://www.rr-africa.oie.int/docspdf/en/2009/VSB/MWEENE1.PDF>>, last accessed 6 January 2011.

Nabarro, D., "One World, One Health. The links between animal and human health are clearly emerging", *IAEA Bulletin*, vol. 51, n° 1, September 2009, pp. 27-31.

Newman, Andy, "City Now Vaccinating Raccoons for Rabies", *New York Times*, 16 February 2010, <<http://cityroom.blogs.nytimes.com/2010/02/16/city-now-vaccinating-raccoons-for-rabies/>>, last accessed 21 December 2010.

*OIE Bulletin*, "One World, One Health", n° 2, 2009, pp. 1-7.

Oo, Babalobi, "Promoting the "One medicine, one health" initiative in Nigeria", <<http://www.sciquest.org.nz/elibrary/download/68268/T3-P12+-Promoting+the+%22One+medicine,+one+health%22+initiative+in+Nigeria>>, last accessed 3 January 2011.

Osburn, B., C. Scott and P. Gibbs, "One World – One Medicine – One Health: emerging veterinary challenges and opportunities", *Rev. sci. tech. Off. int. Epiz.*, vol. 28, n° 2, pp. 481-486.

Osofsky, S. A. (ed.), "Conservation and Development Interventions at the Wildlife/Livestock Interface, Implications for Wildlife, Livestock and Human Health, *Occasional Paper of the IUCN Species Survival Commission*, 2005, n° 30.

Osofsky, S. A., W. B. Karesh and S.L. Deem, "Conservation Medicine: a Veterinary Perspective, Letter", *Conservation Biology*, vol. 14, n° 2, April 2000, pp. 336-337.

Osofsky, S. A., D. H. M. Cumming and M. D. Kock, "Transboundary Management of Natural Ressources and the Importance of a 'One Health' Approach, Perspectives on Southern Africa", in: Eva Fearn (ed.), *2008-2009 State of the Wild, A Global Portrait of Wildlife, Wildlands, and Oceans*, Wildlife Conservation Society, Islandpress, Washington, 2009, pp. 89-98.

*Pathobiology eNews*, “Recommended article”, vol. 1, n° 1, January 2010, <<http://www.onehealthinitiative.com/publications/DPP%20eNewsletter%20Vol1%20Issue1.pdf>>, last accessed 3 January 2011.

Peltier, Claire, “Le chikungunya s’installe en France métropolitaine”, <[http://www.futura-sciences.com/fr/news/t/medecine/d/le-chikungunya-sinstalle-en-france-metropolitaine\\_25326/](http://www.futura-sciences.com/fr/news/t/medecine/d/le-chikungunya-sinstalle-en-france-metropolitaine_25326/)>, last accessed 21 December 2010.

Powdrill, T.F., T.L. Nipp and J.L. Rinderknecht, “Conference Summary. One Health Approach to Influenza: Assessment of Critical Issues and Options”, *Emerging Infectious Diseases*, vol. 16, n° 8, August 2010.

Press information bureau of the government of India, “Vision and Road Map”, 6 December 2007, <[http://siteresources.worldbank.org/INTTOPAVIFLU/Resources/NewDelhi\\_Roadmap\\_Final.pdf](http://siteresources.worldbank.org/INTTOPAVIFLU/Resources/NewDelhi_Roadmap_Final.pdf)>, accessed 22 November 2010.

Prowse, S.J., N. Perkins and H. Field, “Strategies for enhancing Australia’s capacity to respond to emerging infectious diseases”, *Veterinaria Italiana*, vol. 45, n° 1, pp. 69-72.

Public Health Agency of Canada, *One World One Health™: from ideas to action, March 16-19, 2009 – Winnipeg, Manitoba, Canada, Report of the Expert Consultation*, <<http://www.phac-aspc.gc.ca/publicat/2009/er-rc/pdf/er-rc-eng.pdf>>, last accessed 11 February 2011.

Quentin-Baxter, M., J. A. Spencer and S. M. Rhind, “Working in parallel, learning in parallel?” *The Veterinary Record*, 26 November 2005, pp. 692-694.

Rabinowitz, P. and L. Conti, *Human-Animal Medicine. Clinical approaches to Zoonoses, Toxicants and Other Shared Health Risks*, Saunders, Maryland Heights, MD, USA, 2009.

Rabinowitz, P., M. Scotch and L. Conti, “Human and animal sentinels for shared risks”, *Veterinaria Italiana*, vol. 45, n° 1, pp. 23-34.

Rabinowitz, Peter MacGarr, Lynda Odofin and F. Joshua Dein, “From ‘Us vs. Them’ to ‘Shared Risk’: Can Animals Help Link Environmental Factors to Human Health?”, *EcoHealth*, 2008, vol. 5, n° 2, pp. 224-229.

The Royal Society, “An integrated approach to infectious diseases in the UK”, *RS Policy Document 2/09*, <[royalsociety.org/WorkArea/DownloadAsset.aspx?id=5448](http://royalsociety.org/WorkArea/DownloadAsset.aspx?id=5448)>, last accessed 3 January 2011.

Regional Strategy for Asia 2007-13 Cross-Border Co-operation in Animal and Human Health, European Commission, Directorate General External Relations Avian Influenza External Response Coordination, EuropeAid Cooperation Office, “Outcome



and Impact Assessment of the Global Response to the Avian Influenza Crisis”, *Final Report*, August 2010.

ResearchMediaLtd, “Dr Laura Kahn, on the One Health Initiative”, 21 July 2010, <<http://www.research-europe.com/index.php/2010/07/dr-laura-kahn-on-the-one-health-initiative/>>, last accessed 23 November 2010.

ResearchMediaLtd, “Dr Bernard Vallat, Director General of the World Organisation for Animal Health”, 24 August 2010, <<http://www.research-europe.com/index.php/2010/08/dr-bernard-vallat-director-general-of-the-world-organisation-for-animal-health/>>, last accessed 4 January 2010.

Roth, F., J. Zinsstag, et al., “Human health benefits from livestock vaccination for burcellosis case study”, *Bulletin of the World Health Organization*, vol. 81, n° 12, pp. 867-876.

Schelling, E., M. Bechir, M.A. Ahmed, K. Wyss, T.F. Randolph and J. Zinsstag, “Human and animal vaccination delivery to remote nomadic families, Chad”, *Emerging Infect. Dis.*, 2007, vol. 13, n° 3, pp. 373-9.

Schelling, Esther and Jakob Zinsstag, “Why should Anyone Invest?... For it's added value!”, CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, “Operationalizing ‘One Health’: A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap”, 4-6 May 2010.

Shuman, E., “Global climate change and infectious diseases”, *New England Journal of Medicine*, vol. 362, n° 12, 2010, pp. 1061–3.

Schwabe, C.W., *Veterinary medicine and human health*, Willimas and Wilkins, Baltimore, 1984.

Scoones, Ian and Paul Forster, The International Response to Highly Pathogenic Avian Influenza: Science, Policy and Politics, *STEPS Working Paper* 10, Brighton, STEPS Center, 2008, <<http://www.steps-centre.org/PDFs/Avian%20flu%20final%20w%20cover.pdf>>, last accessed 31 October 2008.

Thoen, C. O., P. A. LoBue, et al., “Tuberculosis: a re-emerging disease in animals and humans”, *Veterinaria Italiana*, vol. 45, n° 1, pp. 135-181.

Trust for Health, “Animal-borne epidemics out of control: Threatening the Nation's Health”, August 2003.

Singh, Manmohan, “[Indian] PM's address at the International Ministerial Conference on Avian and Pandemic Influenza”, 5 December 2007, New Delhi, <<http://pmindia.nic.in/speech/content.asp?id=623>>, last accessed 23 November 2010.

Snyder, P.W., P. Mann, B. Bolon, et al., "Brief Communication. The Society of Toxicology Pathology and the "One Health" Initiative", <[http://www.toxpath.org/Position\\_Papers/One\\_Health.pdf](http://www.toxpath.org/Position_Papers/One_Health.pdf)>, last accessed 3 January 2011.

Stewart, C., J. Cowden, J. McMenamin, B. Reilly, "Veterinary public health", *BMJ*, vol. 331, 26 November 2005, p. 1213.

Thamm, D. and S. Dow, "How companion animals contribute to the fight against cancer in humans", *Veterinaria Italiana*, vol. 45, n° 1, pp. 111-120.

United Nations, The World Bank, *Animal and Pandemic Influenza, A Framework for Sustaining Momentum*, Fifth Global Progress Report, July 2010.

Vallat, B., "One World, One Health", (editorial) *OIE Bulletin*, n° 2, 2009, p. 2.

Vandersmissen, Alain, "Cross-border Co-operation in Animal and Human Health in Asia 2007 – 2013 – Flashback, State of Play and Perspectives", p. 14, <[www.asef.org/index.php?download...](http://www.asef.org/index.php?download...)>, last accessed 4 January 2011.

Vandersmissen, Alain, "One Health": From a Classical Concept to a Modern Dynamics for Global Co-operation", CDC with FAO, OIE, WHO, Stone Mountain (Atlanta) Meeting, "Operationalizing 'One Health': A Policy Perspective – Taking Stock and Shaping an Implementation Roadmap", 4-6 May 2010.

Veterinarians without Borders, *One Health for One World: A compendium of Case Studies*, April 2010.

Walsh, A.L. and D. Morgan, "Identifying hazards, assessing the risks", *The Veterinary Record*, 26 November 2005, pp. 684-687.

Waltner-Toews, David, "Eco-Health: A primer for veterinarians", *Canadian Veterinary Journal*, vol. 50, May 2009, pp. 519-521.

WHO/DFID-AHP, "The Control of Neglected Zoonotic Diseases", Report of a Joint WHO/DFID-AHP Meeting with the participation of FAO and OIE, Geneva, 20 and 21 September 2005, <[http://www.who.int/zoonoses/Report\\_Sept06.pdf](http://www.who.int/zoonoses/Report_Sept06.pdf)>, last accessed 11 February 2011.

WHO, "Nipah Virus (NiV) Infection", <<http://www.who.int/csr/disease/nipah/en/index.html>>, last accessed 22 December 2010.

WHO, "Zoonoses", <<http://www.who.int/topics/zoonoses/en/>>, last accessed 11 February 2011.

WHO, OIE, Agreement Between The World Health Organization And The Office International Des Épizooties, 16 December 2004, <<http://www.oie.int/en/about-us/key-texts/cooperation-agreements/agreement-with-the-world-health-organization-who/>>, last accessed 9 February 2011.

WHO, “Accords avec des organisations intergouvernementales. Collaboration entre l’OMS et l’Office international des Epizooties. Rapport du secretariat”, 63th World Health Assembly, A63/46, Point 18.3, 22 April 2010, p. 1.

WHO, Annex 2, “Text of amended Agreement between the Office International des Epizooties and the World Health Organisation”, A63/46 – 22 April 2010, article 4.1 and 4.3, in 63rd World Health Assembly, “Resolutions and decisions. Annexes”, WHA63/2010/REC/1, Geneva, 17-21 May 2010.

WHO Executive Board, 124th Session, Provisional agenda item 4.1, “Pandemic influenza preparedness: sharing of influenza viruses and access to vaccines and other benefits. Report by the Secretariat.” EB124/4, 27 November 2008, § 14.

WHO, FAO, OIE, Zoonotic Diseases: A Guide to Establishing Collaboration between Animal and Human Health Sectors at the Country Level, 2008.

The World Bank (Agriculture and Rural Development. Health, Nutrition and Population), *People, Pathogens and Our Planet. Volume 1: Towards a One Health Approach for Controlling Zoonotic Diseases*, Report n° 50833-GLB, 2010.

Zinsstag, Jakob, Esther Schelling, Bassirou Bonfoh, et al., “Towards a ‘One Health’ research and application tool box”, *Veterinaria Italiana*, vol. 45, n° 1, p. 122.

Zinsstag, J., et al., “From ‘one medicine’ to ‘one health’ and systematic approaches to health and well-being”, *PREVET*, 2010, doi: 10.1016/j.prevetmed.2010.07.003, p. 2.

Zinsstag, J., E. Schelling and M. Tanner, “‘One medicine – one health’ et médecine vétérinaire en Suisse”, *Schweiz. Arch. Tierheik*, vol. 151, n° 7, July 2009, p. 7.

Zinsstag, J. and M. Tanner, “‘One Health’: The potential of closer cooperation between human and animal health in Africa”, *Ethiopian Journal of Development*, n° 22, 2008, pp. 1-4.

Zinsstag, Jakob, Esther Schelling, F. Roth, et al., “Human Benefits of Animal Interventions for Zoonosis Control”, *Emerging Infectious Diseases*, vol. 13, n° 4, April 2007, pp. 527-531