

# Ecosystem Approaches to the Better Management of Zoonotic Emerging Infectious Diseases

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**ILRI**

International Livestock Research Institute

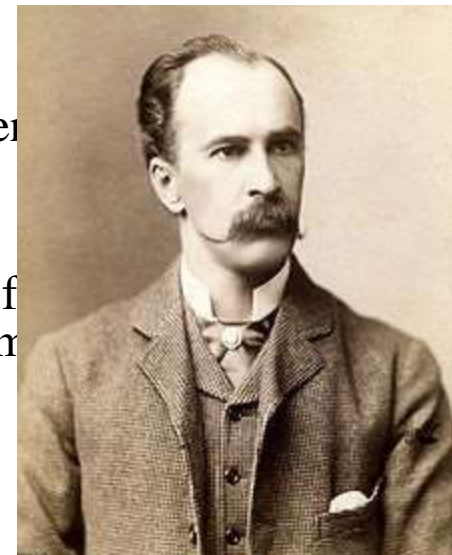
**CIVAS Seminar**  
**'EcoHealth Approaches in the Control of Emerging & Re-emerging infectious diseases'**  
**Bogor, 8 Jan 2011**

# JG introduction



# History of 'One Health'

- Ancient times: experts often treated both animals & humans.
- 11<sup>th</sup> – 17<sup>th</sup> Century: Human medicine integrated into the medieval universities, whereas veterinary medicine focussed on horses and remained in the hands of equeeries;
- 18<sup>th</sup> century : The first veterinary school in Lyon (1762)
- 19th century:
  - Rudolf Virchow
  - William Osler
- 20th century: both science hardly visible
- **1940s:** Collaboration in US.
- 1976: Calvin Schwabes' "medicine" in, that fully rec and animals for nutrition, li
- DVM driven?



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# One World – One Health



**One World, One Health** *one world - one health*

Home

**29 September 2004**  
New York Symposium  
*"Building interdisciplinary  
Bridges to Health in a  
Globalized World"*

**15 November 2004**  
Bangkok Workshop  
*"Beyond Zoonoses: The  
Threat of Emerging Diseases  
to Human Security and  
Conservation, and the Imp-  
lications for Public Policy"*

**15-17 November 2005**  
China Workshop  
*"Beyond Zoonoses: The  
Threat of Emerging Diseases  
to Human Health, Agriculture  
and Conservation: Imp-  
lications for Public Policy"*

**2-4 October 2007**  
Brazil Workshop  
*"Healthy Ecosystems,  
Livestock and Human  
Livelihoods: An Innovative  
Public-Private Partnership"  
(Ecosistemas, Animais  
Silvestres E Meio De Vida  
Humano Saudáveis: Uma  
Parceria Público-Privada  
Inovadora)"*

**One World – One Health: Brazil 2009 Meeting**  
**22 October 2009**

For information on the OWOH Brazil 2009 Meeting, please contact:

Fabiola Prioste  
[owoh2009@gmail.com](mailto:owoh2009@gmail.com)  
55 (11) 9251-8041

Flavia Miranda  
[fmiranda@wcs.org](mailto:fmiranda@wcs.org)  
55 (11) 9600-9739

[Visit our Brazil Workshop page](#)  
2-4 October 2007

All presentations, including video, audio, PDFs,  
and slides are now online.

View Press Release:  
"Wildlife Conservation Society Announces  
One World One Health Research Projects Funded by Cargill"  
[English PDF](#) | [Portuguese PDF](#)

**About "One World, One Health"**

Health experts from around the world met on September 29, 2004 for a symposium focused on the current and potential movements of diseases among human, domestic animal, and wildlife populations organized by the Wildlife Conservation Society and hosted by The Rockefeller University.



- ‘Manhattan principles’, the health and sustainable maintenance of wildlife in natural reserves is mutually interdependent with the health of communities and their livestock surrounding them

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

# One World – One Medicine - One Health

The screenshot shows a web browser window with the title "One Health Initiative - One World One Medicine One Health". The address bar displays "http://www.onehealthinitiative.com/about.php". The browser's menu bar includes "SwetsWise", "VIZIONS", "OIE-VetEduc", "WikiCGIAR", "ILRI-E-lib", "ILRI webmail", "Gmail", "Apple", and "Google Maps".

The main content area features a large banner with a globe and the text "One Health initiative". Below the banner, the page is titled "About the One Health Initiative". The text describes the concept as a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans and animals. It states that the synergism achieved will advance health care for the 21st century and beyond by accelerating biomedical research discoveries, enhancing public health efficacy, expeditiously expanding the scientific knowledge base, and improving medical education and clinical care. When properly implemented, it will help protect and save untold millions of lives in our present and future generations.

To the right of the text is a graphic showing a globe flanked by two caducei. Below the graphic is a quote: "May there never develop in me the notion that my education is complete but give me the strength and leisure and zeal continually to enlarge my knowledge." - Maimonides -

Below the quote is a box with the following text:

**One World-One Medicine-One Health**

**\*\*Accelerated biomedical research discoveries—Enhanced public health efficacy—Expanded scientific knowledge base—Improved medical education and clinical care\*\***

-- ADVANCING HEALTH CARE for the 21st century --  
Humans & Animals  
Collaborative-Synergistic-Enlightening

The left sidebar contains a navigation menu with the following items: Home page, About One Health, Mission Statement, One Health News, AVMA Task Force Report, One Health Newsletter, Publications, ProMED Outbreak Reports, Supporters, Supporter Endorsements, Upcoming Events, Follow Us on Twitter, and Contact Us.

The footer of the page contains the text "One Health Initiative" followed by a list of links: Home, About One Health, Mission Statement, One Health News, AVMA Task Force Report, One Health Newsletter, Publications, Supporters, Supporter Endorsements, Upcoming Events, and Contact Us.

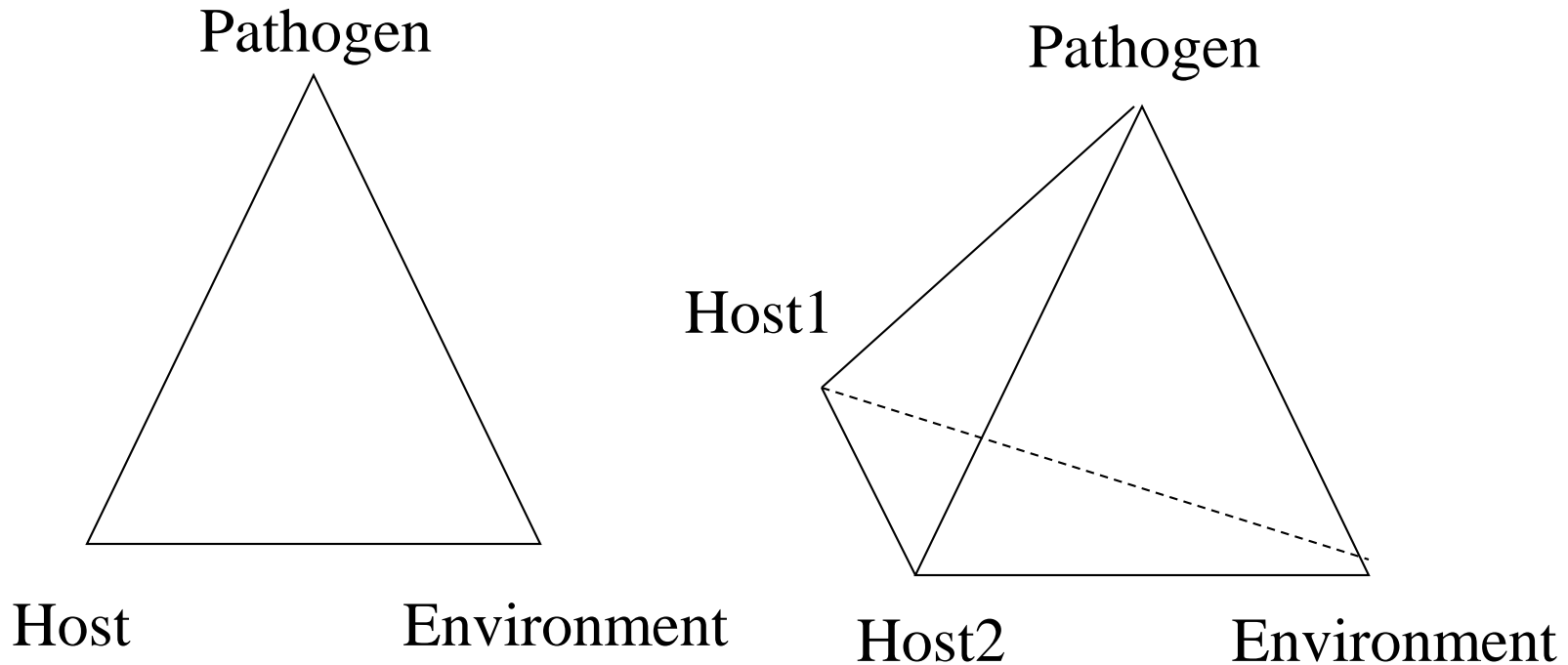
# EcoHealth

- Abbreviated from Ecosystem Health
- **Ecology** ( οἶκος, "house" or "living relations"; -λογία, "study of") is the scientific study of the distributions, abundance, share affects, and relations of organisms and their interactions with each other in a common environment.
- An **Ecosystem** consists of all the organisms living in a particular area, as well as all the nonliving, physical components of the environment with which the organisms interact, such as air, soil, water, and sunlight

# EcoHealth (2)

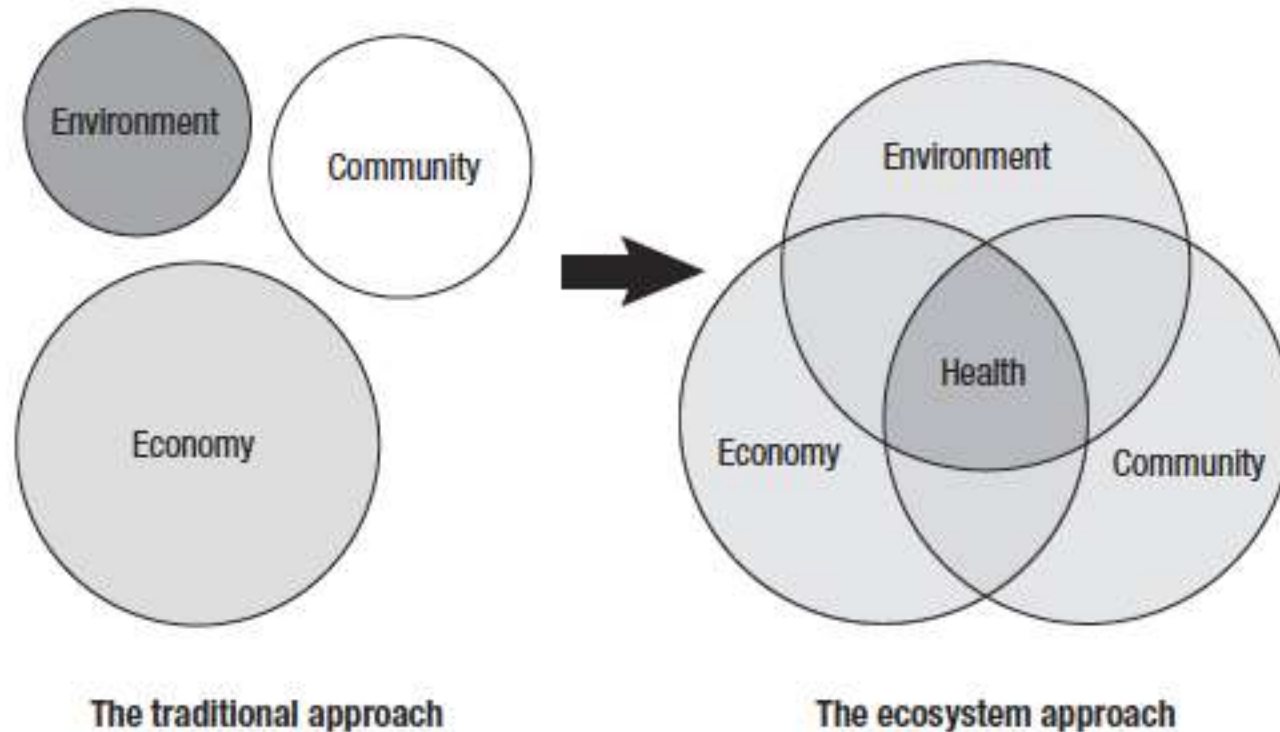
- Programme created in 1996 within IDRC Poses the question: ‘can people remain healthy in a world that is sick?’
- Bio-physical +social (ecology, socio-economics...)
- Systems thinking & complexity versus reductionist
- Not limited to infectious diseases (although zoonoses is excellent context)
- People/public health goal
- Research-orientated approach – though with policy implications/impact
- CoPEHs
- No standard definition & interpretation
- ‘before EH’ era

# EcoHealth (3)



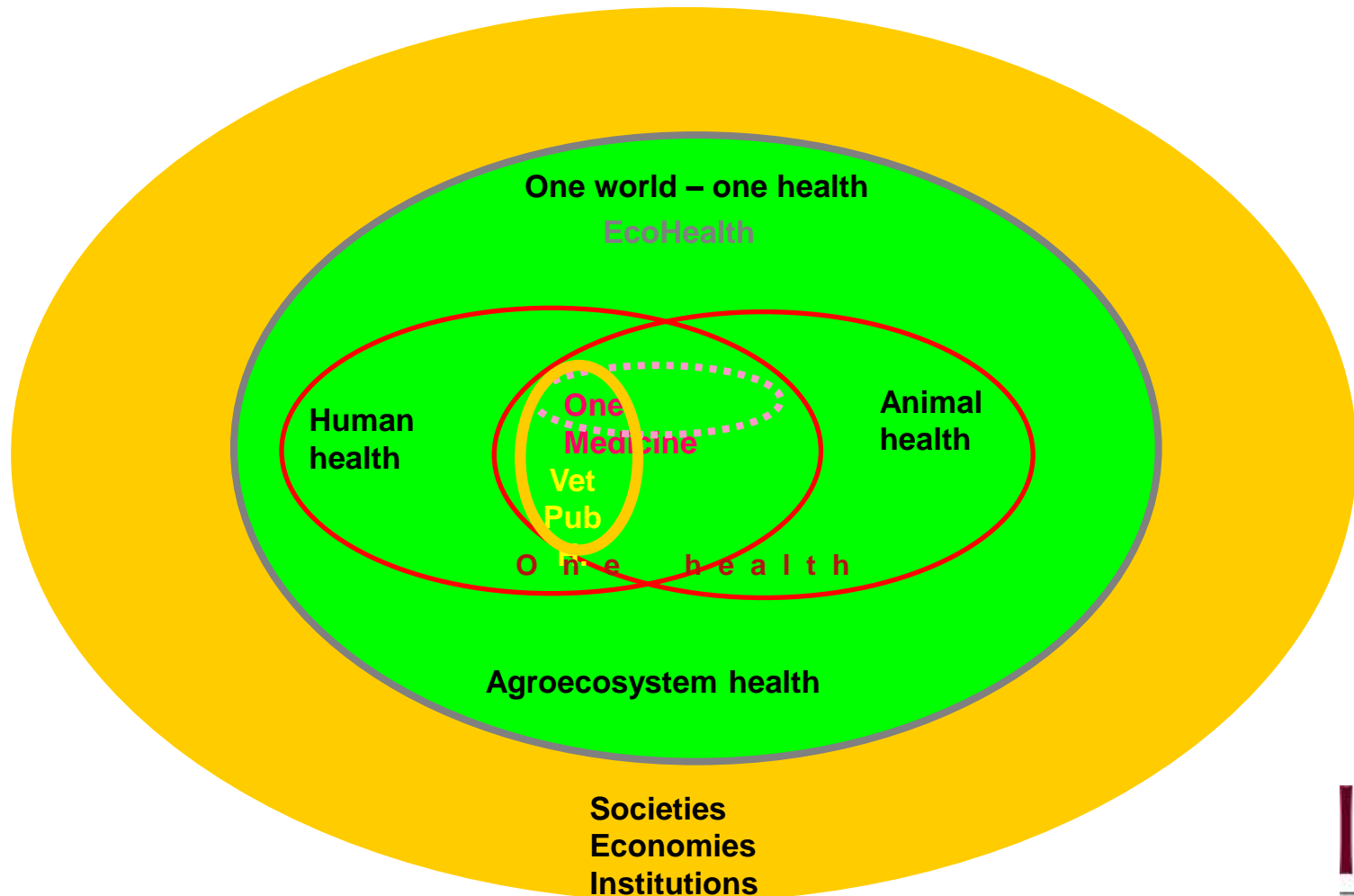


# EcoHealth (4)



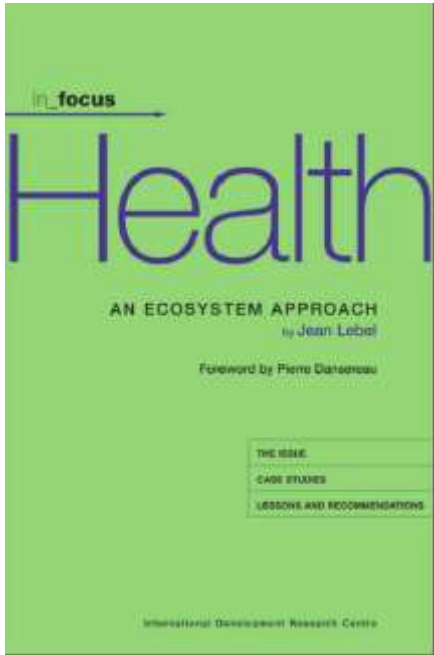
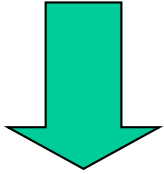
**Figure 1.** The ecosystem approach gives equal importance to environmental management, economic factors, and community aspirations. Traditional methods focus more on the latter two, to the detriment of the environment (adapted from Hancock 1990).

# EcoHealth (5)



# EcoHealth 'Pillars'

- **Transdisciplinary:** inclusive vision, full involvement of researchers, community & decision-makers;
- **Participation:** consensus and cooperation not only *within* community, scientific & decision-making groups, but *among* them;
- **Equity:** gender, ethnic group..
- **Sustainability**



**IDRC/AusAID (EcoEID)**



**ILRI-EcoZD**



**BECA**



VETERINARIANS  
WITHOUT BORDERS

VÉTÉRINAIRES  
SANS FRONTIÈRES



# ‘EcoHealth Approaches to the Better Management of Zoonotic EIDs in SE Asia’

- 6 countries: Cambodia, China (Yunnan), Lao PDR, Indonesia, Viet Nam & Thailand (2008 to 2012)
- Central objective is to build capacity in research institutions and researchers within them – ‘*learning by doing*’ approach;
- Research using ‘EcoHealth’ approach; zoonotic EID with livestock component.
- Additional partners to support public health, wildlife & environment
- EcoZD Country Teams
- Formal training & mentoring
- EcoHealth Resource Centres (CMU & UGM)

# EcoZD

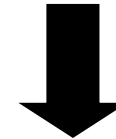
## Identification of Counterparts

- Scoping study
- Existing network

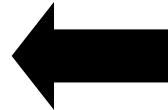


## Transdisciplinarity

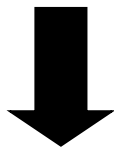
- Animal Health Services
- Public Health
- Agriculture & ...
- Academic v Govt



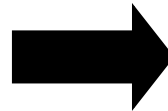
## Finalise research team 'EZCT'



## Meetings to plan focus of research



## Govt approval; research agreements



## Research underway

- Training
- Mentoring
- Community & Decision-Maker



## EcoHealth Case Studies

# EcoZD country teams

- **Cambodia:** priority causes & proportion of zoonotic diarrhoea (dysentery);
- **China:** Brucellosis & toxoplasmosis;
- **Indonesia:** Rabies (Bali);
- **Lao PDR:** pig zoonoses;
- **Thailand (+2):** small-scale poultry slaughterhouse hygiene;
- **VietNam:** priority zoonoses in small-holder pig systems;

# EcoZD challenges

- Supply & demand – high donor interest in EIDs & ZEIDs
- Who does what? - eg IDRC-EcoHealth programme initiatives;
- Language – ‘*lingua franca*’ of SE Asia?
- Country differences – ‘one size *doesn't* fit all’
- Limited technical capacity in some countries (or region within);
- EcoHealth is a novel participatory approach & often confused with OneHealth etc;
- Counterparts not convinced (case studies not relevant, Id)
- 2-dimensional needs of capacity building;
- ZEIDs versus Endemic versus NZD
- bio-medical bias



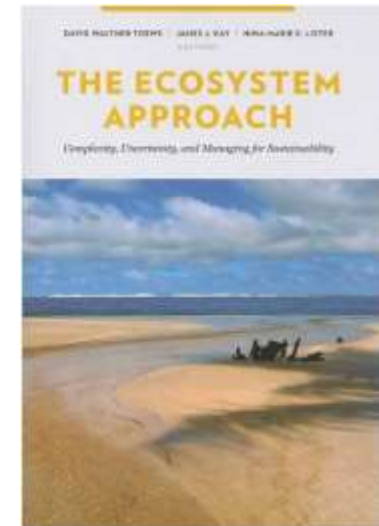
# Challenges & potential solutions

- *Supply & demand*
- *Who does what?* – better coordination, project objectives etc reviewed – SD/CD/ new concept of EHRC;
- *Language* – English but local language training **EHRCs**
- *Country differences* – regional consultations
- *Limited technical capacity* linkage eg Lao PDR (ACIAR) **EHRCs**
- *EcoHealth is novel* – extended planning time, **EHRCs**, regional meetings, research outputs;
- *Counterparts not convinced:* research outputs & case studies from SEAR **EHRCs**
- *2-dimensional needs of capacity building* - **EHRCs**;
- *ZEIDs versus Endemic versus NZD* – adaptive hence EcoZEID>EcoZD, approach is key
- *bio-medical bias* - **EHRCs**

# Concluding remarks

- Certainly a need to cooperate/ collaborate/ complement in a sustainable fashion
- Challenges remain substantial
- Need champions to emerge & advocate the cause
- EcoHealth provides one possibility
  - Clear involvement of environment
  - Tangible, edges (ecosystem) defined
  - Successful case studies
  - Donor interest
  - But sustained advocacy for incorporation into Govt strategy
- EcoZD is ‘stepping stone’ medium to long term
- ILRI’s ongoing commitment to holistic approaches and interest in collaboration in future research

# EcoHealth Resources



[www.idrc.ca/ecohealth](http://www.idrc.ca/ecohealth)

[www.onehealthinitiative.com](http://www.onehealthinitiative.com)

<http://www.ecohealth.net/>

[http://www.izs.it/vet\\_italiana/2009/45\\_1/45\\_1.htm](http://www.izs.it/vet_italiana/2009/45_1/45_1.htm)

<http://haliproject.wordpress.com/>

**ILRI**  
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# International Livestock Research Institute

***Better lives through livestock***

*Animal agriculture to reduce poverty, hunger and environmental degradation in developing countries*

**Terima Kasi**



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