Social sciences issues in a "*One Health*" approach

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JITMM JOINT INTERNATIONAL TROPICAL MEDICINE MEETING

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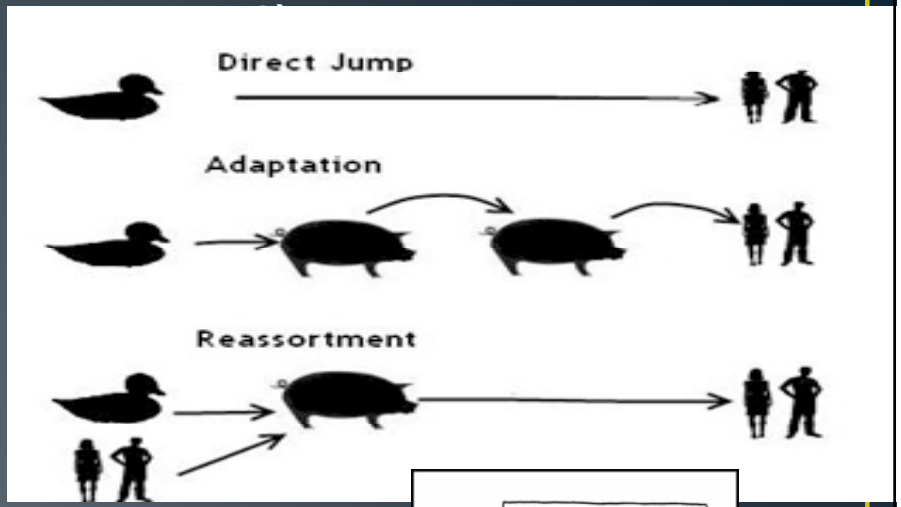
Bangkok

INFLUENZA (H5N1,



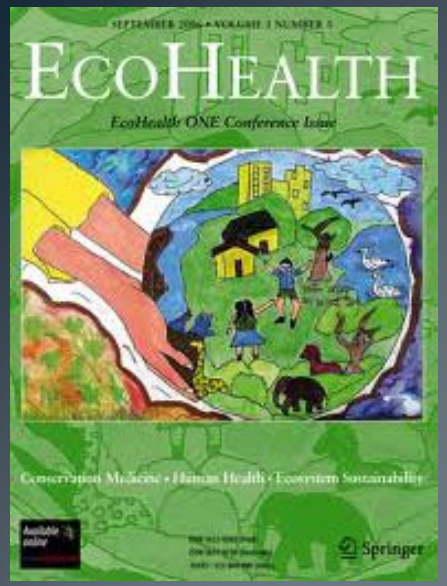
Links among human, animal and environmental health

Holistic approaches to health
«*One Health*» etc.

Associating human and veterinarian medicine to address zoonoses*.


One medicine + « Environment » = **One Health**

*** About 60 % of human diseases are zoonotic and 75 % of EIDs have an animal origin (OIE)**



Ecohealth

ECOSYSTEM APPROACH TO HUMAN HEALTH

- a framework for setting impact objectives -

Source: Forget and Lebel, 2001

Transdisciplinarity
Equity
Participation

Socio-cultural factors

Natural Resource Management

Identify opportunities for change

Behavioural factors

Knowledge

Understanding the Determinants of Ecosystem and Human Health

Global change

IMPROVED HEALTH

Societal Response To Health and Human Development Needs

Development of Policies

Economic factors

Empowerment

Optimize interventions for change

Environmental factors

Sustainability

Human Resource Management

IDRC CRDI

2 approaches responding challenging public health management

One Health	ECOHEALTH

- IDRC, International Association for Ecology & Health, (Ecohealth Journal), research/development and networks (forums, conferences,...)
- disciplinary experts, digenous groups, civil , decision-makers

rch and action ms/action gathering s local projects, tial *scaling up*

up approach based on pation, equity

Improve health of human communities through the improvement of natural and social environment and human/nature interactions

2 approaches responding to complex challenges of public health ...

One Health

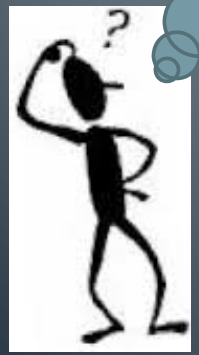
- 2008 Initiative gathering FAO, OIE, WHO, WB + national gov ments, *Global Early Wa g System* (joint platfo improve early warnin outbreaks worldwide) USAID, operationality
- Strategic plan to redu infectious diseases risk at the human-animal ecosystems interface
- **Top down** approach

ECOHEALTH

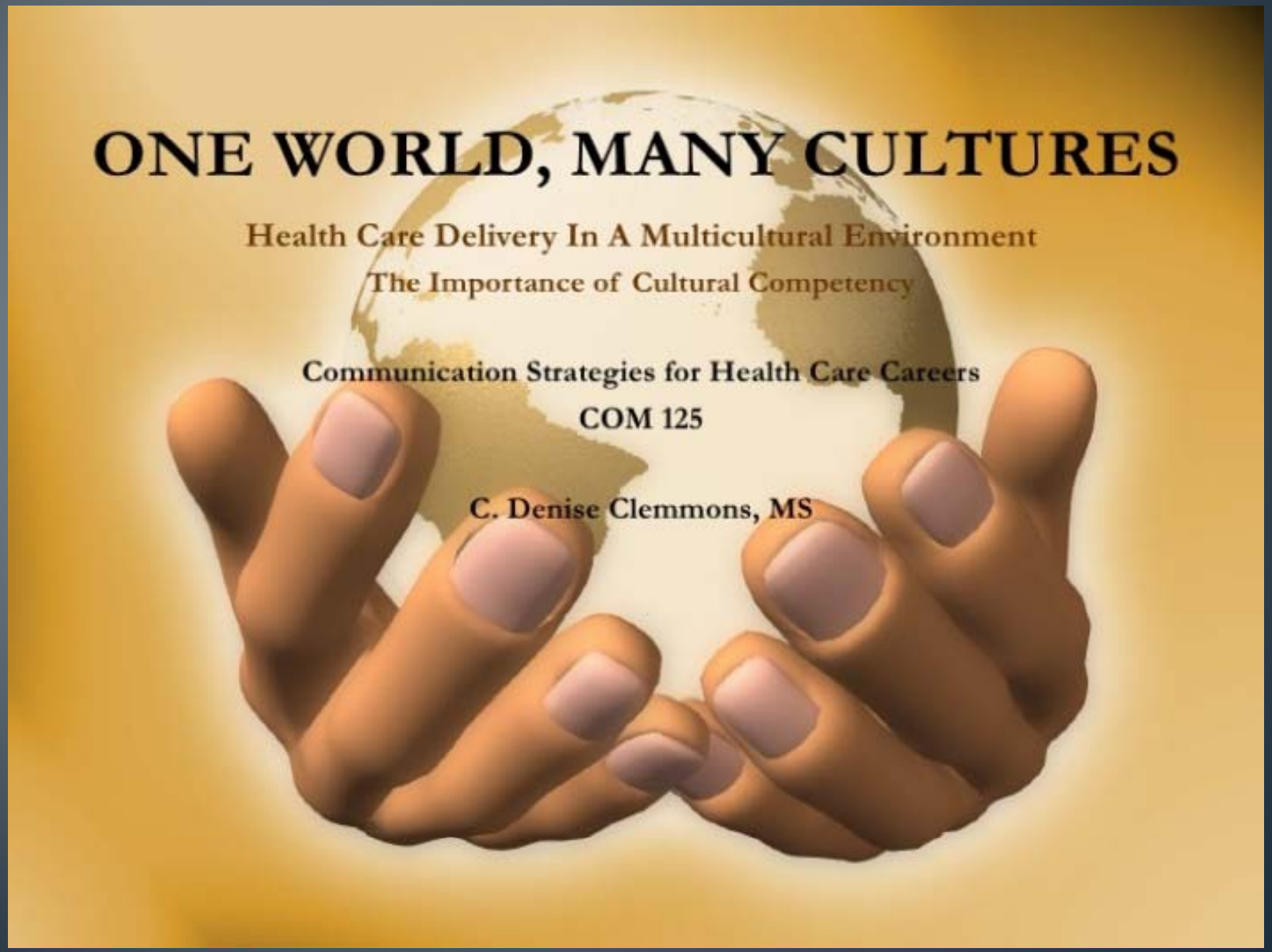
Detect and fight more efficiently new pathogens at animal-human-ecosystem interface

Need for a paradigm shift!

Wich « **environment** » are we talking about?



What about « SOCIAL environment » d



Social Sciences inputs

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→ **Emergence patterns**
Social, Cultural, Economical and Political

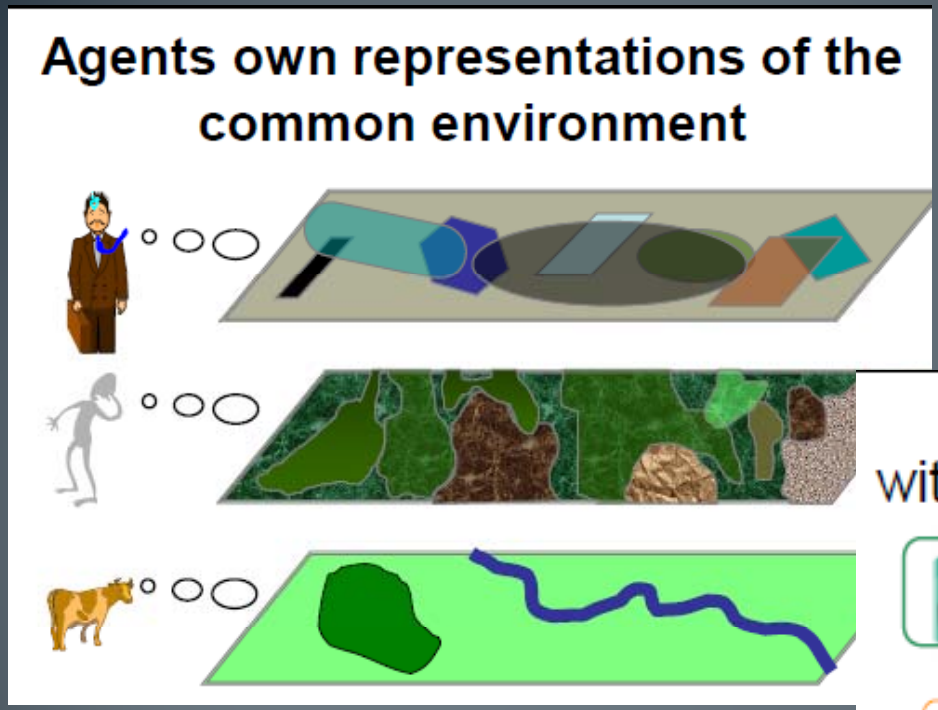
→ **Risks** Representations and **Perceptions**

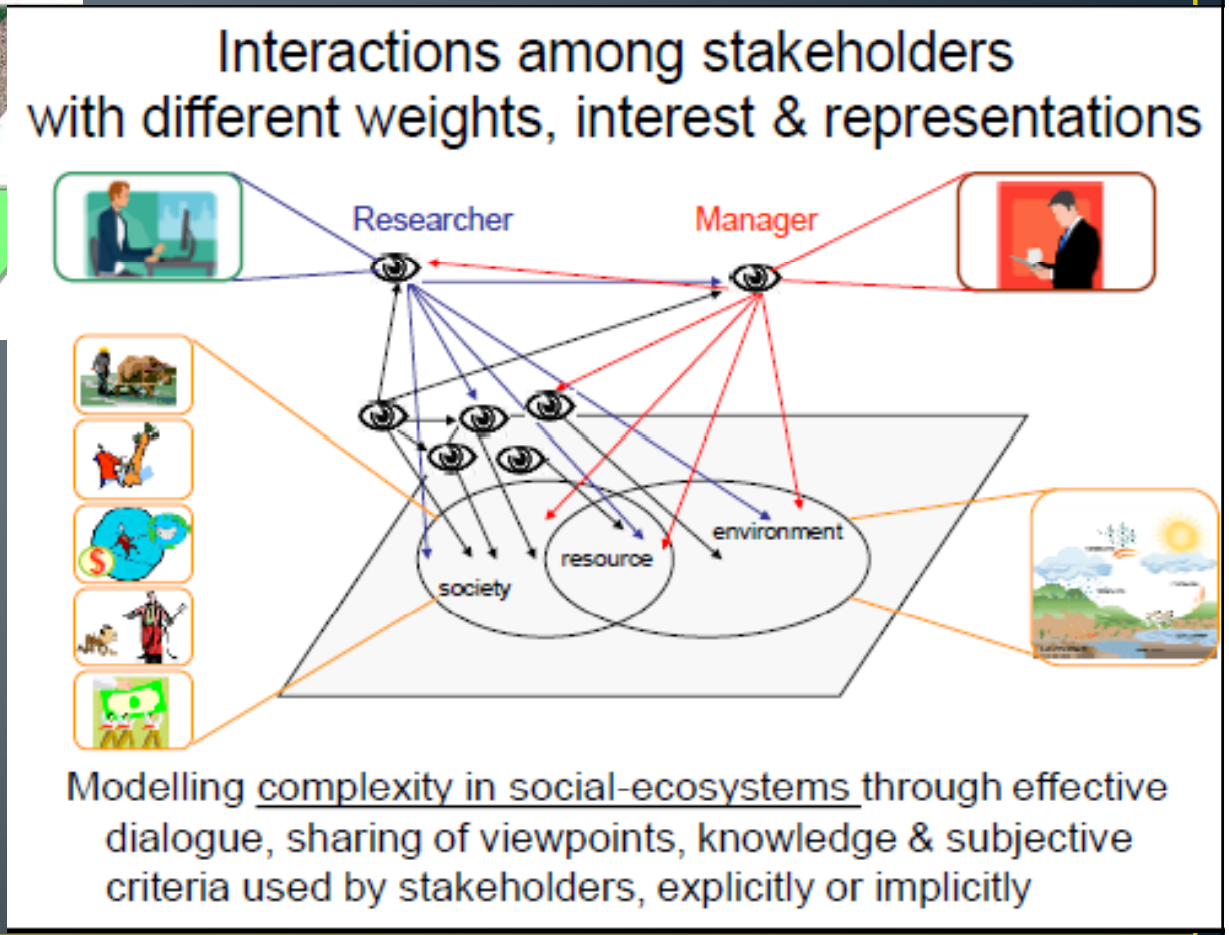
→ **Communities Empowerment**
finding solutions through **participatory approaches**

Merging together Social & Biomedical Scien...

Qualitative Data Narratives

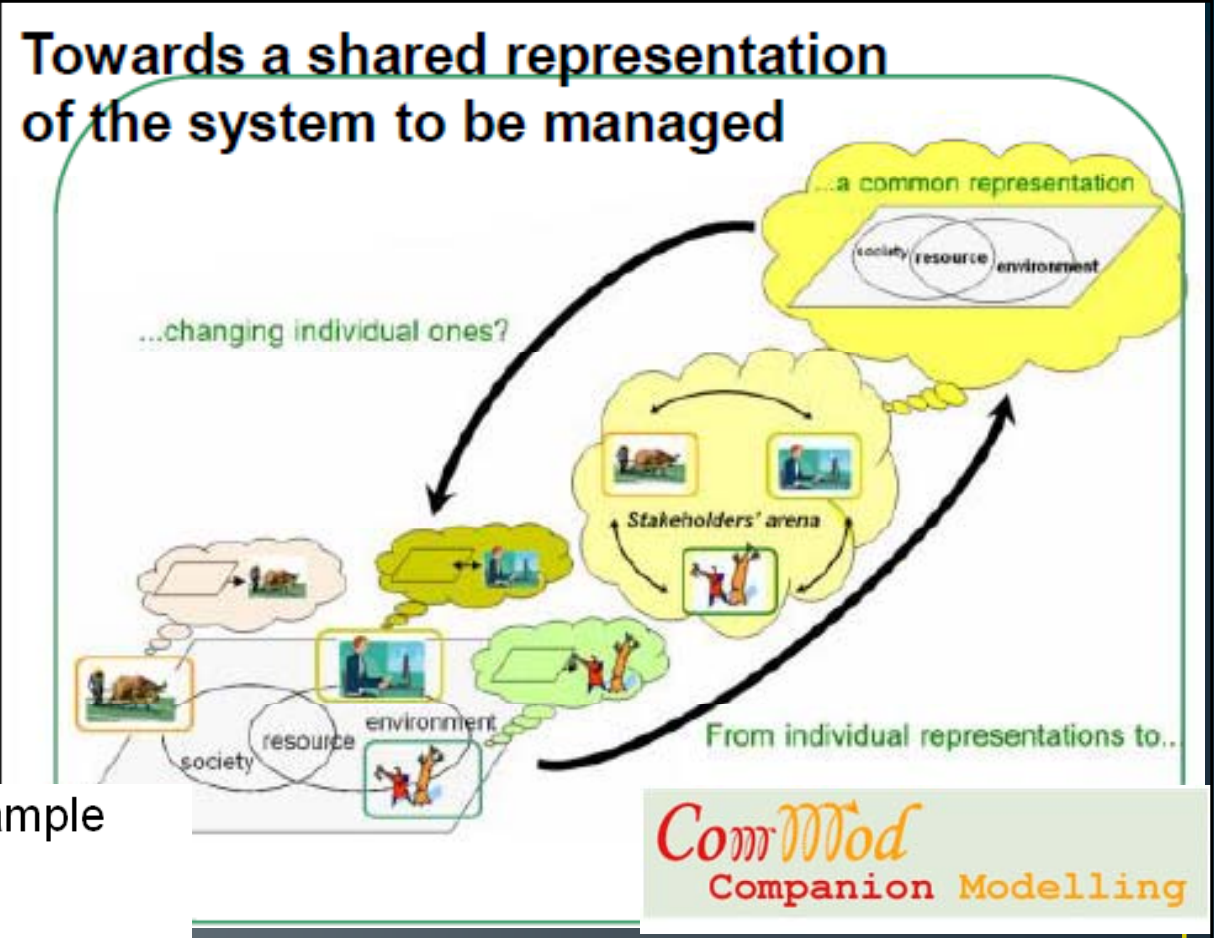
CO-DESIGNING A SHARED REPRESENTATION OF SOCIO-ECO-EPIDEMIOLOGICAL SYSTEMS

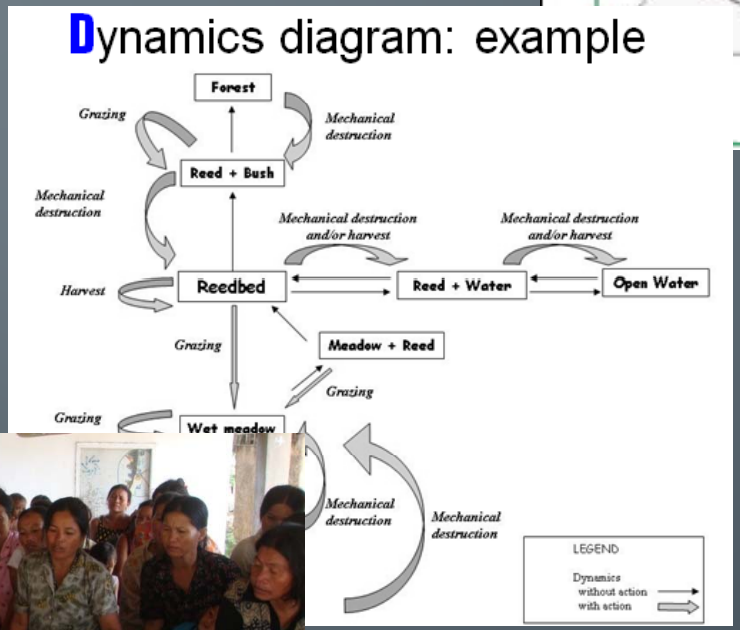




Participatory approaches to mapping & modeling

Participatory modeling method for co-designing a shared representation





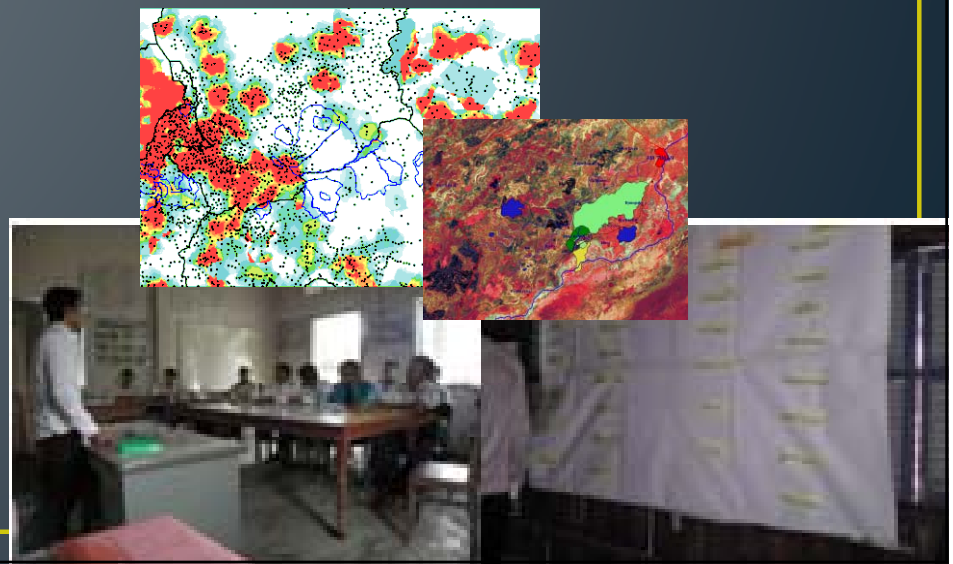
ComMod Companion Modelling

Elaborating a **conceptual model of socio-ecological** interactions at work in a given system

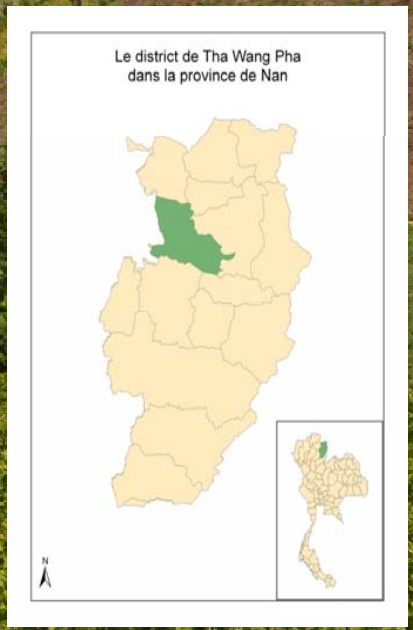
→ Toward a socio-environmental model for risk assessment

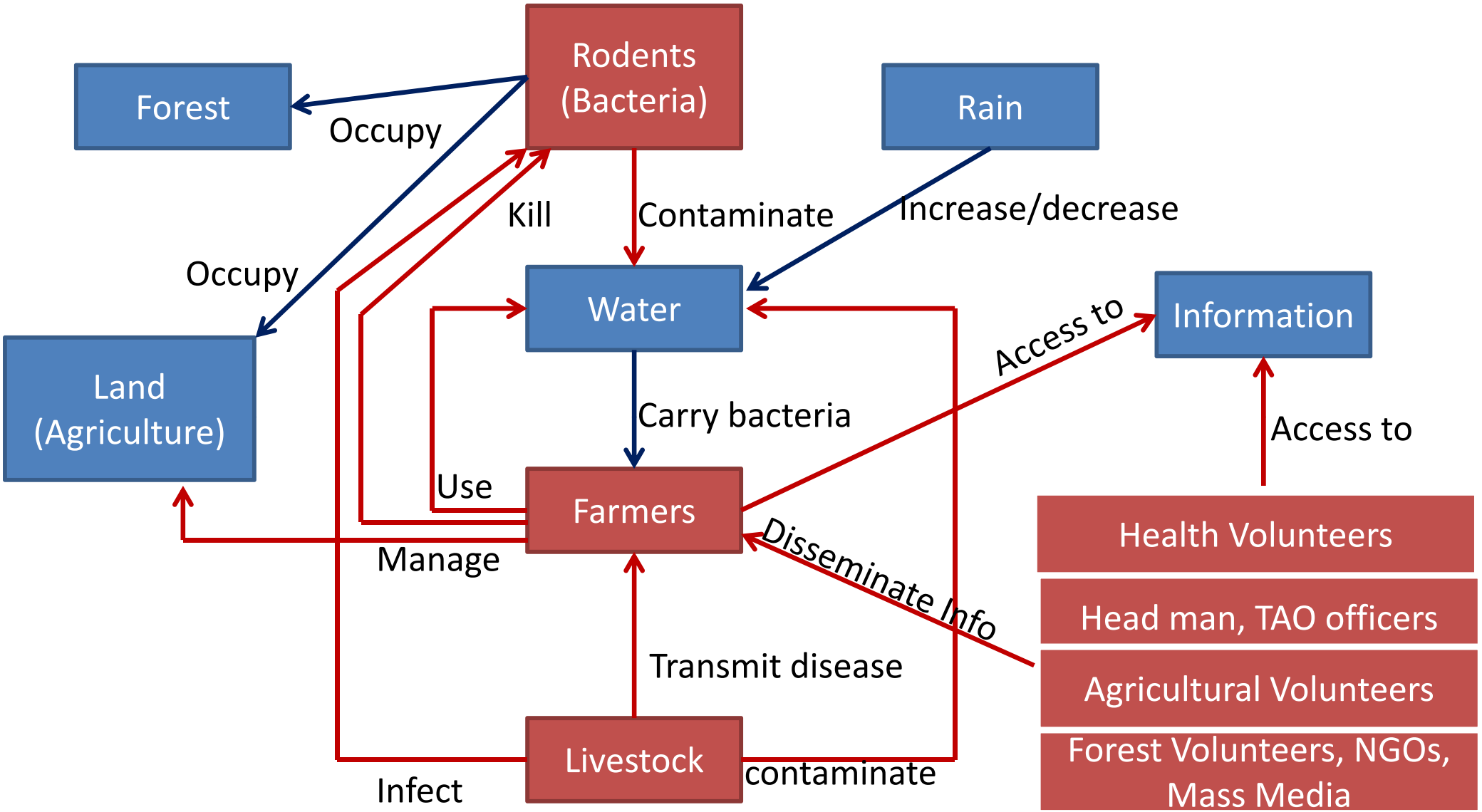
Developing risk mapping process with layers as defined by communities : risk factors, risks manageability, socio-spatial stakes at play, environmental patterns, socioeconomic resources, seasonality and periodicity etc.

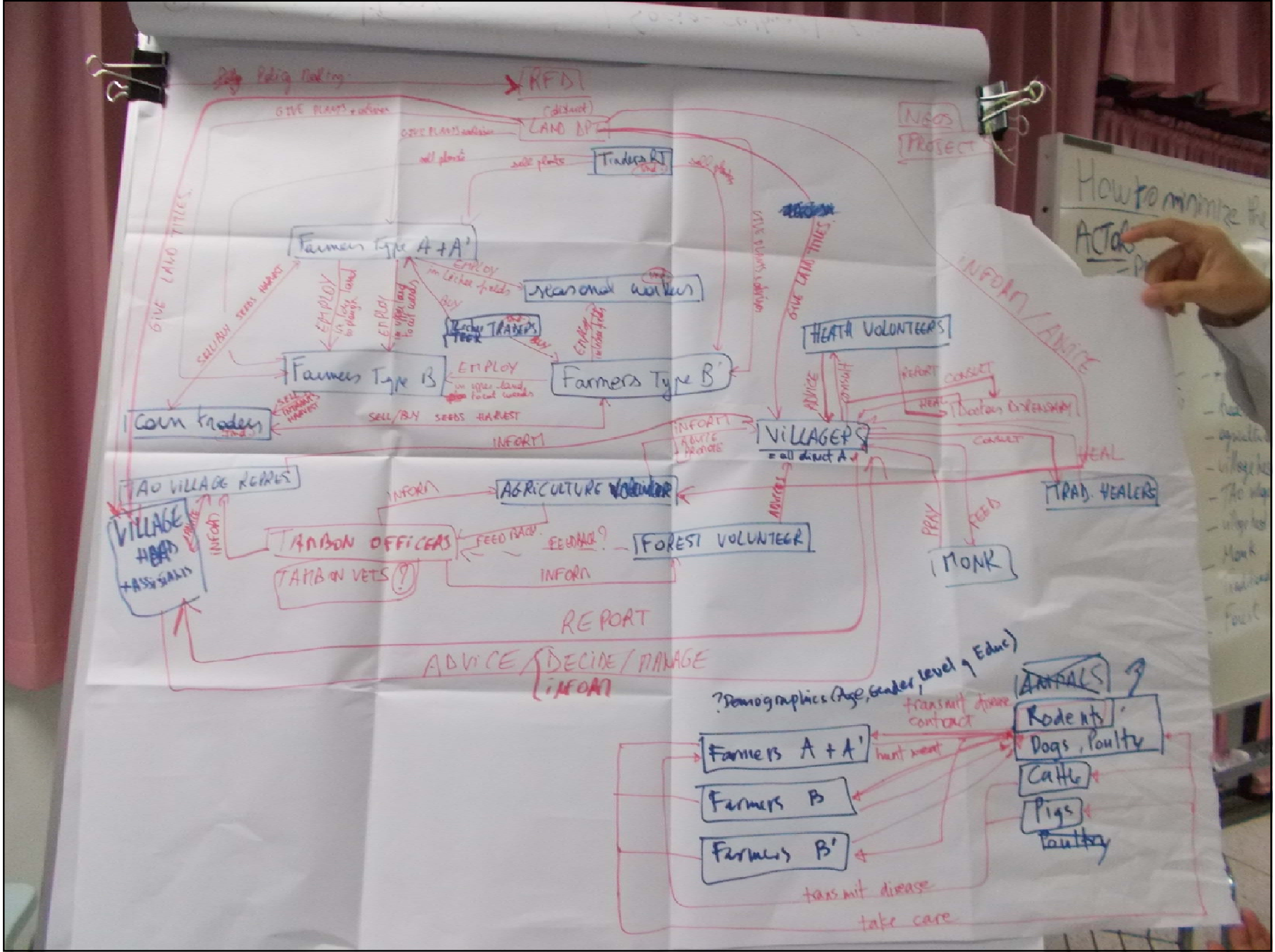
Participatory mapping taking into account the various representation of the "landscape" (by natural resources users, mobile actors, scientists, authorities, etc.)



How to minimize the risks associated with leptospirosis in Ban Huai Muang (Nan Province) ?




ACTORS / RESOURCES
Rodents (Bacteria)
Forest
Rain
Occupy
Kill
Contaminate
Increase/decrease
Occupy
Water
Land (Agriculture)
Access to
Information
Carry bacteria
Access to
Use
Farmers
Health Volunteers
Manage
Disseminate Info
Head man, TAO officers
Transmit disease
Agricultural Volunteers
Forest Volunteers, NGOs, Mass Media
Livestock
contaminate
Infect


RFD
(district)
LAND DPT
Traders RT
Farmers Type A+A'
seasonal workers
Farmers Type B
Farmers Type B'
Corn traders
HEATH VOLUNTEERS
VILLAGERS
= all direct A
AO VILLAGE KEARES
VILLAGE
TAMBON OFFICERS
TAMBON VETS
AGRICULTURE
FOREST VOLUNTEER
MONK
TRAD. HEALERS
REPORT
ADVICE
DECIDE/MANAGE
INFORM
Farmers A+A'
Farmers B
Farmers B'
Rodents
Dogs, Poultry
Cattle
Pigs
Poultry
transmit disease
take care

DYNAMICS

- Disease transmission
- Bacteria cycle (animal host and reservoir; land and water contamination)
- Land use change and impact on water management
- Information spreading
- Livelihood strategies, socioeconomic dynamics

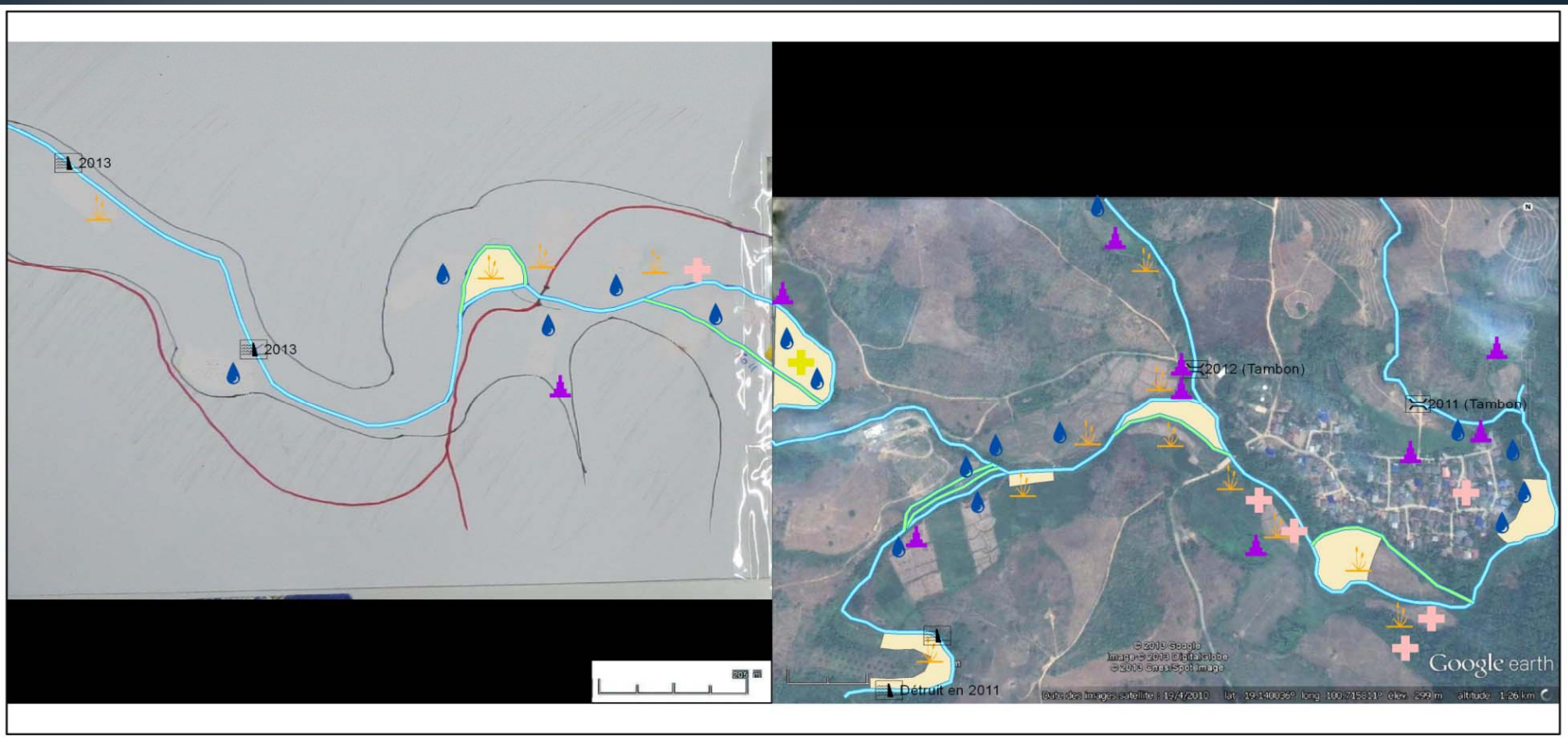
Ranking key Resources/Dynamics

- Water : Transmission of disease, bacteria carrier)
- Crops : Influence rodent distribution, land use change, attract rodents, contact with water (rice), economical impact (vulnerability to the risk)
- Domesticated animals : Hosts of the bacteria (potential source of transmission cf. cattle, pigs, dogs), economical impact (vulnerability to the risk)
- Wildlife (rodents) : Reservoir of the bacteria, forest and river contamination
- Information : Awareness about the risk and mitigation measures (e.g. water distribution systems), reporting to responsible institutions, education

SCALES and Geographic units

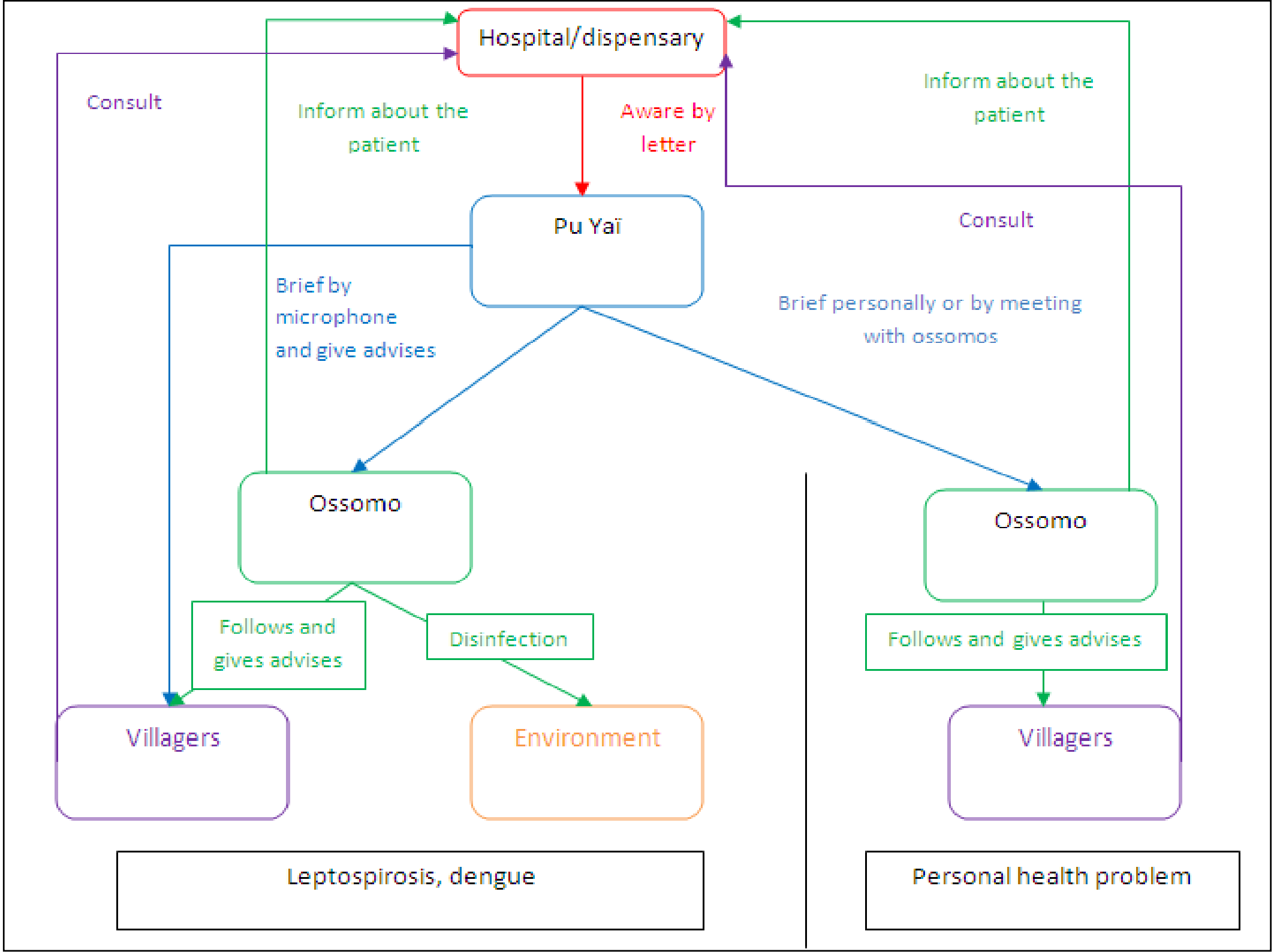
- Time scale for farming dynamics: 1 year cycle in order to understand seasonal cycles
- Time scale for rodents: 4 months (life cycle)
- Farms scale:
- Type A & A’ 10 ha (upper land); 0,8ha (lowland)
- Type B 3,5 ha (upper land)
- Type B’ 7 ha (upper land)
- Resources: need for a mapping process to know areas of agricultural land (approx. 5 km^2) and forest land used by villagers

PARTICIPATORY MAPPING : WATER & PERCEIVED RISKS



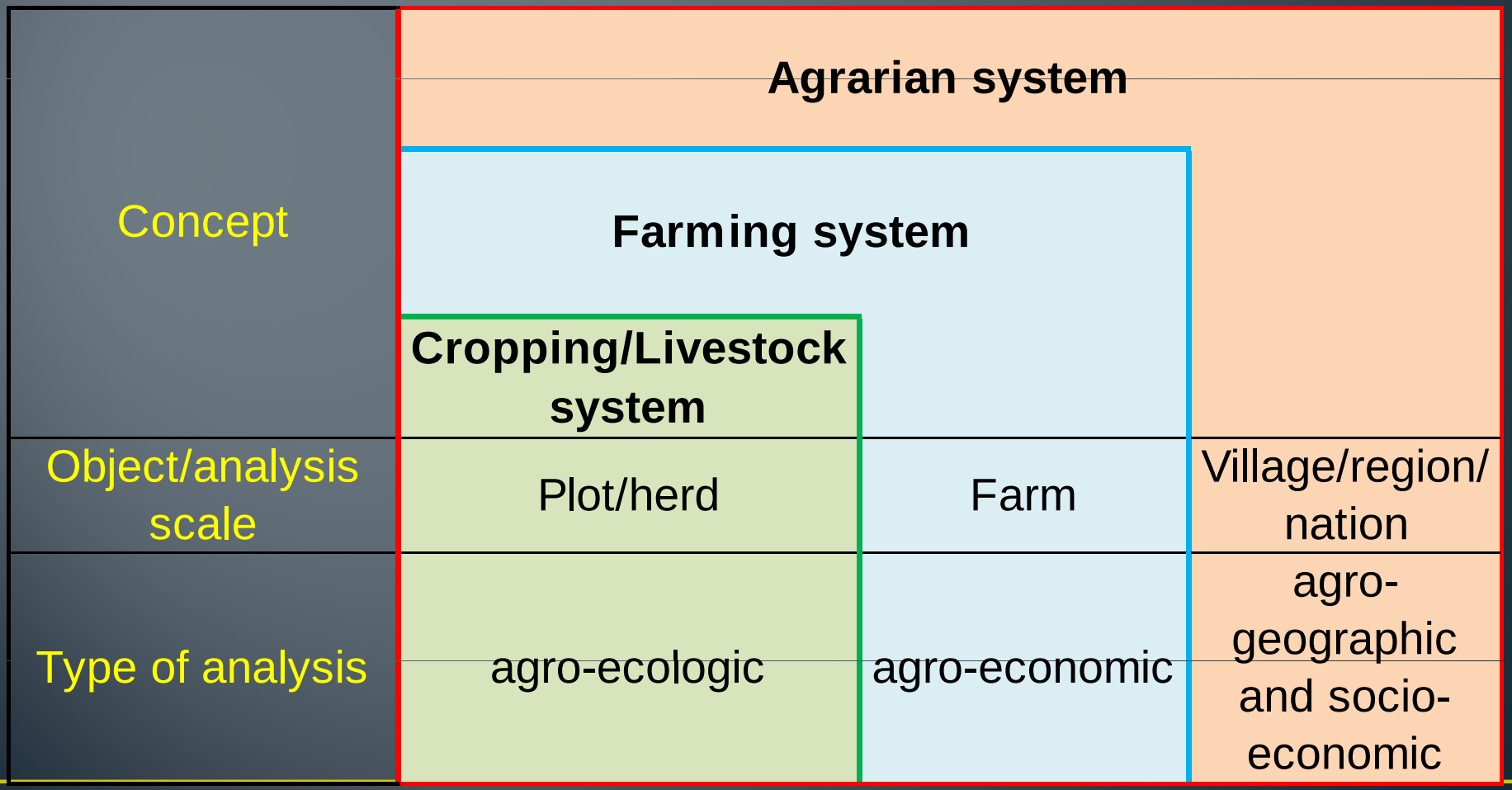
carte participative: lien entre inondations et santé (exemple de la Leptospirose)

- Leptospirose
- Maladies de peau
- phi
- Barrage
- Perte de récolte des participants en 2011
- Tunnel
- inondation de 2011
- zones d'inondation récurrentes


Hospital/dispensary
Consult
Inform about the patient
Aware by letter
Inform about the patient
Pu Yaï
Consult
Brief by microphone and give advises
Brief personally or by meeting with ossomos
Ossomo
Ossomo
Follows and gives advises
Disinfection
Follows and gives advises
Villagers
Environment
Villagers
Leptospirosis, dengue
Personal health problem

Diagnostic-analysis of agrarian system for livelihood systems differentiation

- **Agrarian system**: dynamic exploitation mode of the environment, historically built by the biophysical and socio-economic contexts evolution, to answer to the human needs
- **Livelihood system**: activities system leading to sustain the subsistence of a group of individuals

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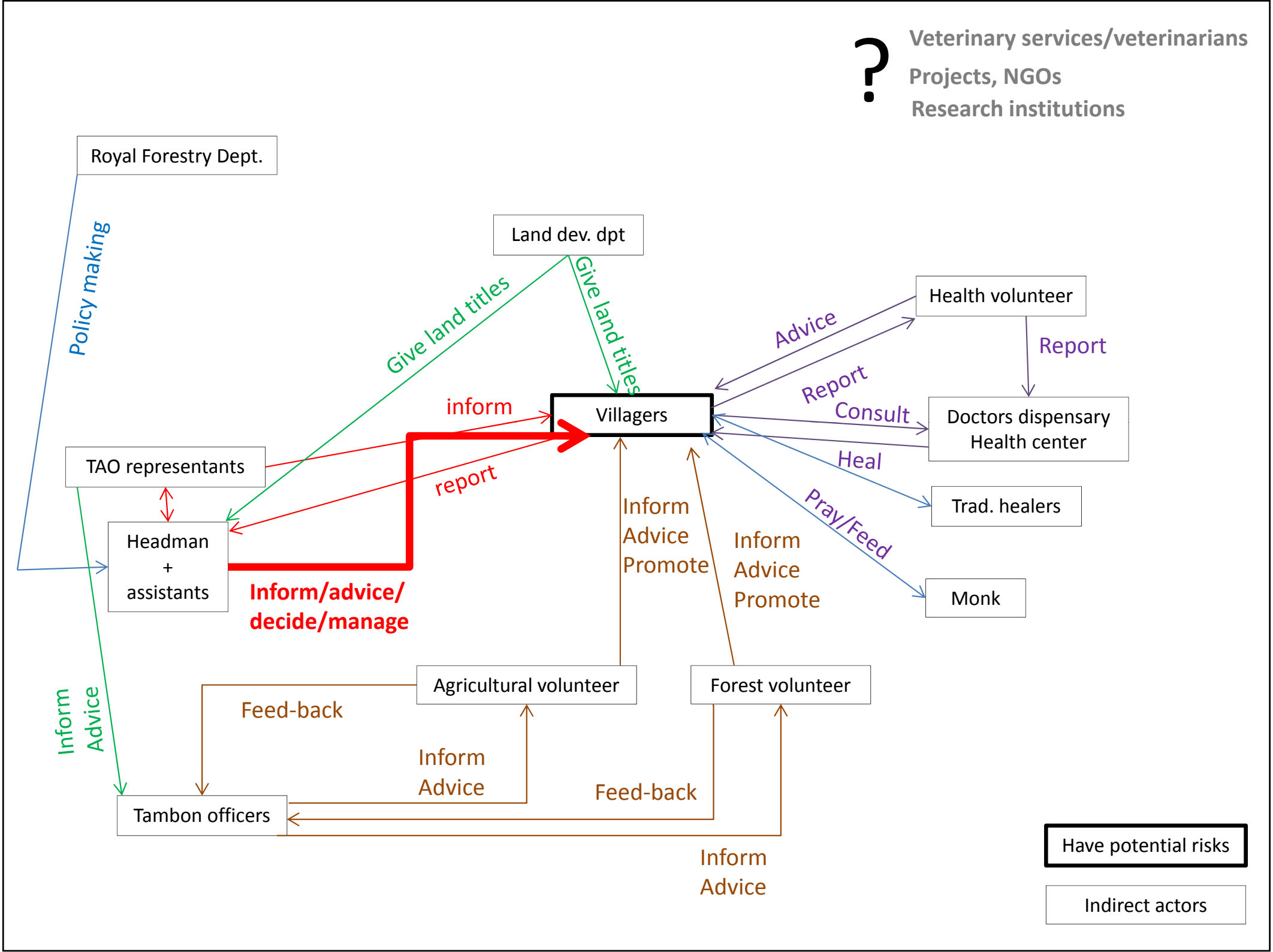
?
Veterinary services/veterinarians
Projects, NGOs
Research institutions
Royal Forestry Dept.
Policy making
Land dev. dpt
Give land titles
Give land titles
Health volunteer
Advice
Report
Report
Consult
Doctors dispensary
Health center
inform
Villagers
TAO representants
report
Heal
Trad. healers
Pray/Feed
Monk
Headman
+
assistants
Inform/advice/
decide/manage
Inform
Advice
Promote
Inform
Advice
Promote
Agricultural volunteer
Forest volunteer
Feed-back
Inform
Advice
Inform
Advice
Feed-back
Tambon officers
Inform
Advice
Have potential risks
Indirect actors

60s-end 70s: settlement and subsistence agriculture

Migration driver: lack of land in origin villages.

Practices → risk exposure:

- Shifting cultivation: living in a forest area and its associated risks

70s-80s opening up of the village

Primary drivers (secondary drivers):

- Second settlement of richest families (new technologies, new knowledge, social modification)
- Asphalted main sub-district road (trade, regional pluri-activity, integration to commodity chains)

New practices → new exposure:

- Irrigated terraces → regular contact with stagnant water full of alluvium
- Tobacco cultivation → wet place in the valley, insecticide utilization
- Maize cultivation→ rat population increase
- Livestock husbandry → contact with livestock
- Logging → regular contact with wild forest

90s-end 2000: between migration and agriculture

- **Primary drivers (secondary drivers):**
  - Logging ban
  - Building and industrial workforce demand
  - Shifting cultivation ban and forest reserves implementation (decrease of soil fertility without fallow rotation, lack of land)
  - (Chemical input promotion)
- **New practices → new exposure**:
  - Intensification of terraces activities (2nd rice harvest, soybean, maize) → more intensive contact with water
  - Chemical products utilization → exposure to toxic products
  - variation of the exposure according to the farming system types
  - System mainly based on agricultural activities are more exposed

End 2000s-nowadays: increasing of agricultural activity

Primary drivers (secondary drivers):

- Maize world price increase, national risk insurance
- Para rubber promotion

New practices → new exposure

- Maximal cropped farmland → brutal land use change
- Maize cultivation generalized → rat population increase, increase of chemical product use, smoke impacting respiratory system

Integration to health surveillance system

- Heterogeneity of at risk population and groups
- Highlight local perceptions and stakes at paly //livelihood strategies
- Very dynamic throughout the time (socioeconomic and environmental factors)
- Coordination between policies of different sectors (forestry, health, agriculture)

Interest of an *EcoHealth* approach in practice, highlighting rather socioeconomic factors than biomedical ones to improve public health

Miss Pauline Della Rossa (ISTOM)

Mr Paul Belchi (AgroParistech

THANK YOU

GREASE

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