

Participatory One Health Modeling (POHM)

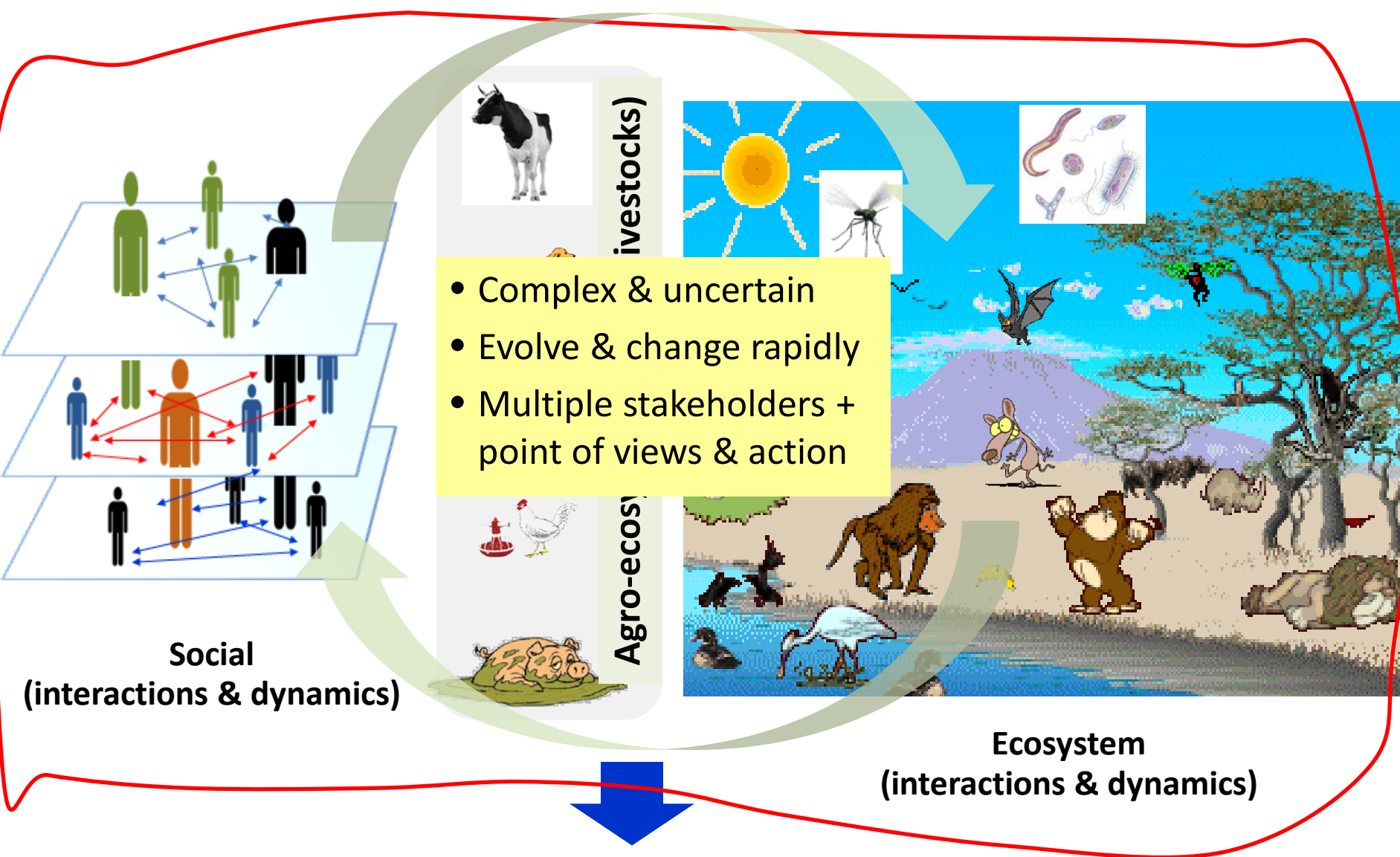
Panomsak Promburom, Raphael Duboz,
Aurelie Binot, Bruce Wilcox, Carsten Richter

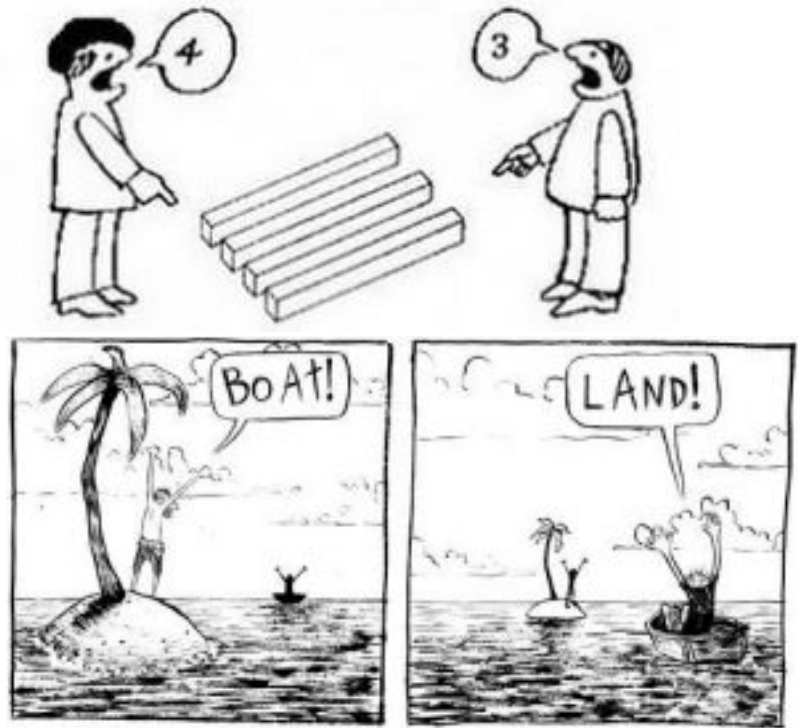
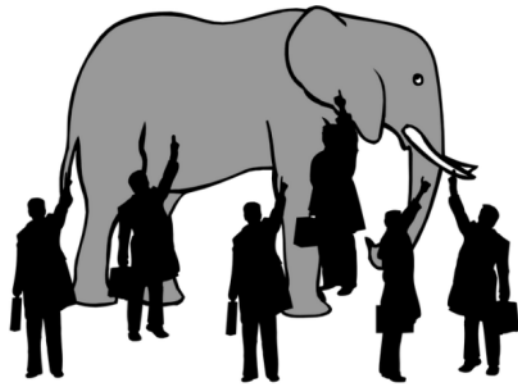
Center for Agricultural Resource System Research (CARSR), Chiang Mai University;
ComAcross Project, EuropeAid One Health Programme in Asia, Kasetsart University
Thailand

Funded by the European
Commission under the
INNOVATE programme



Complex Social-ecological system: one health

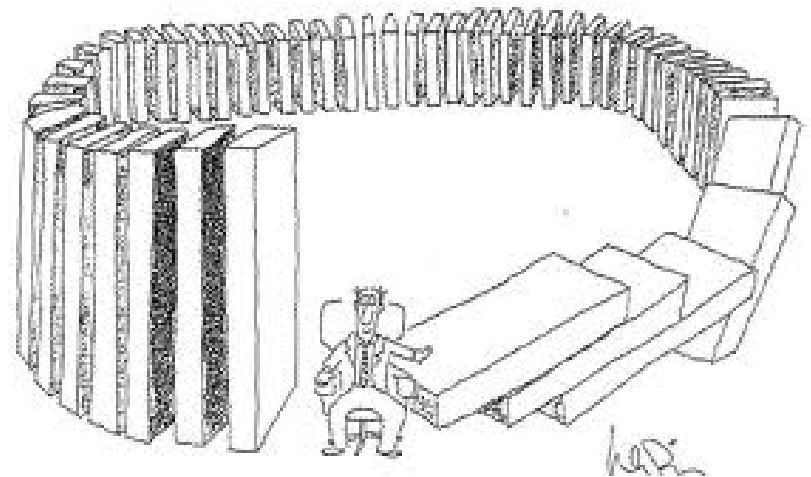
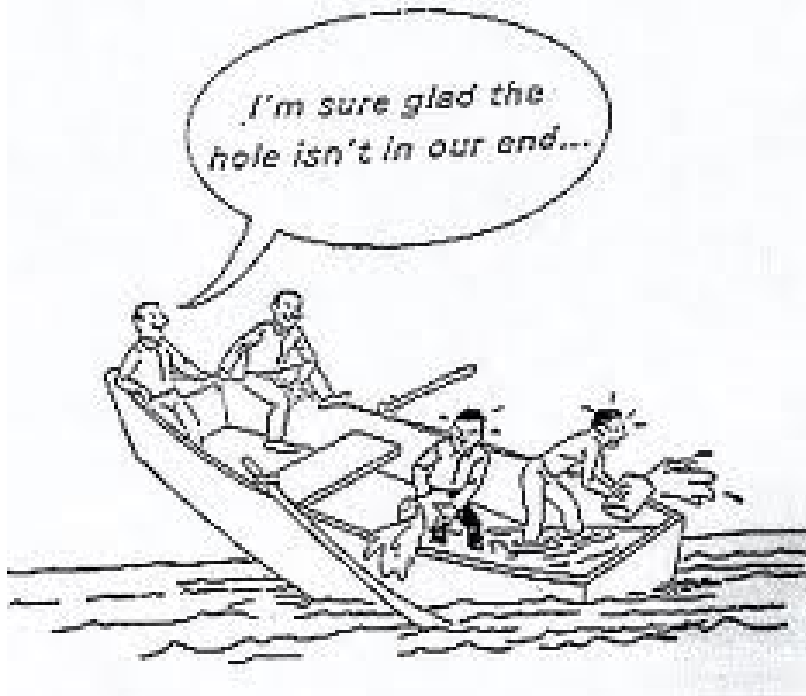


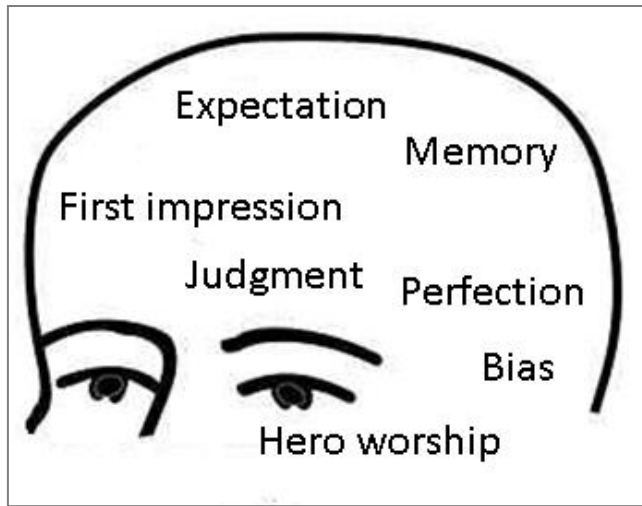


Multiple actors



Different representations





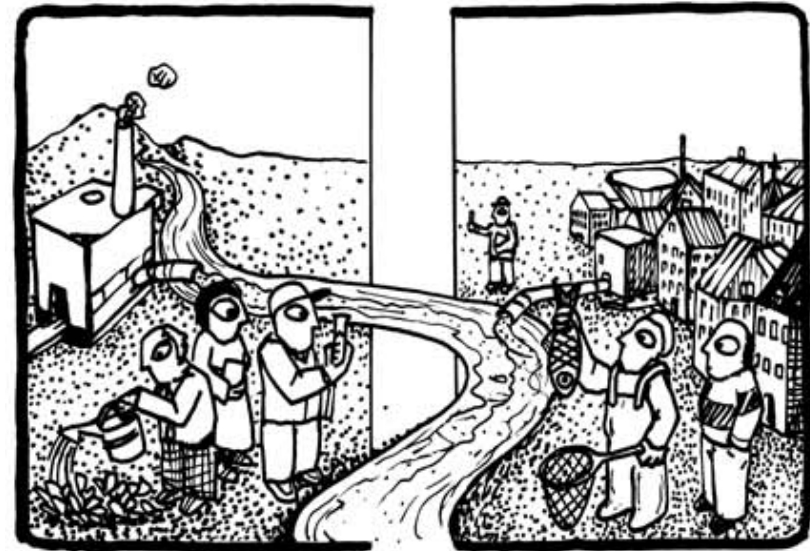
Objectives / values / needs + Attitude / Beliefs / knowledge



Understand / represent / model
how a system is, works, performs

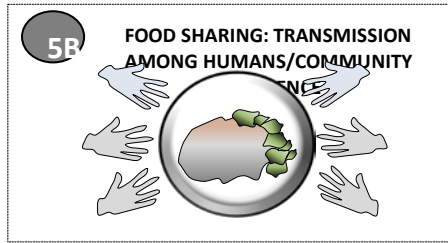


**Act upon & interact with
such components in the system**



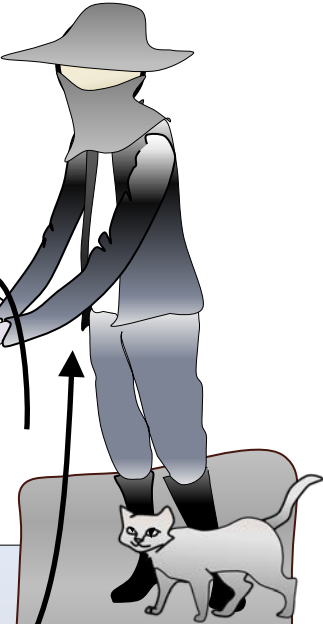
Liver fluke Transmission and ways to control

Latrine

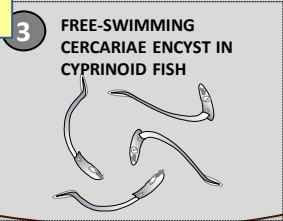
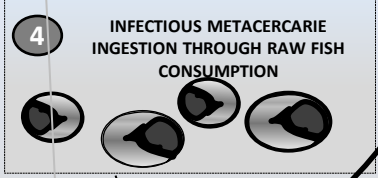


Medicine

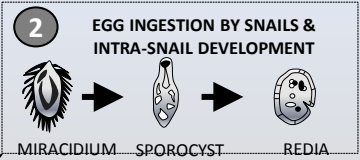
Adjust consuming habit



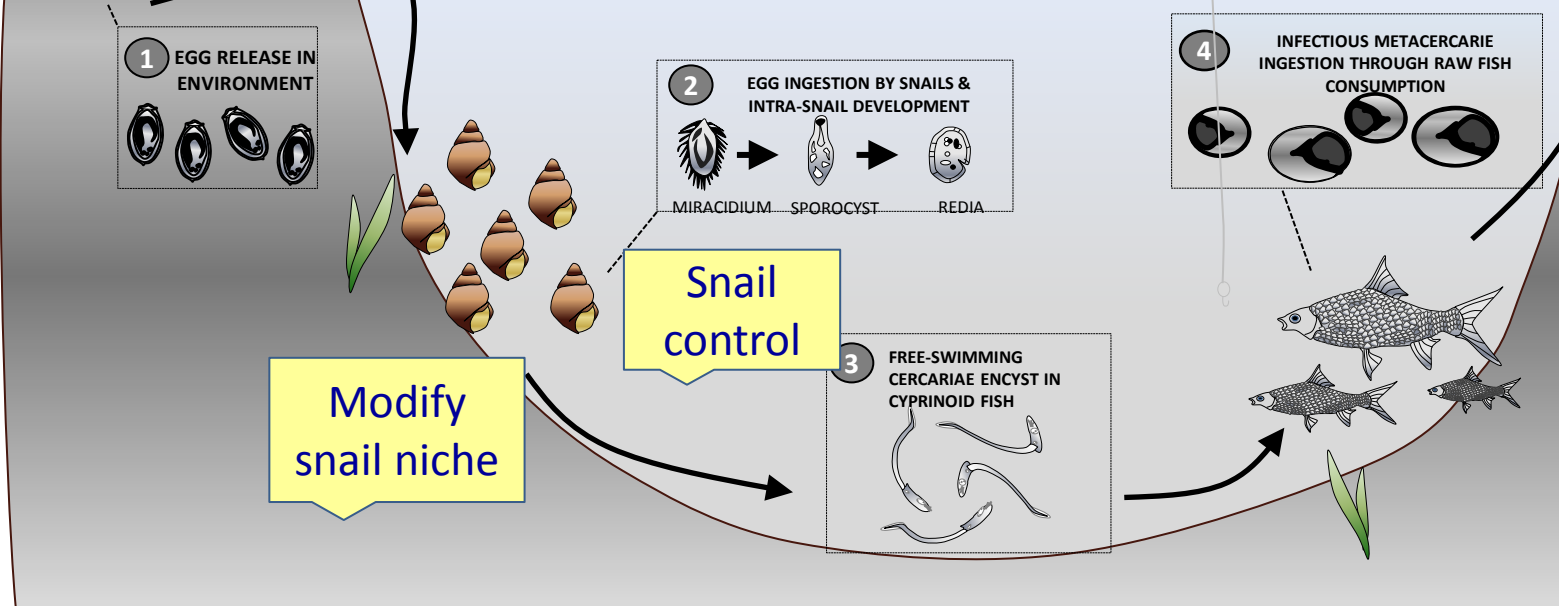
Cat control

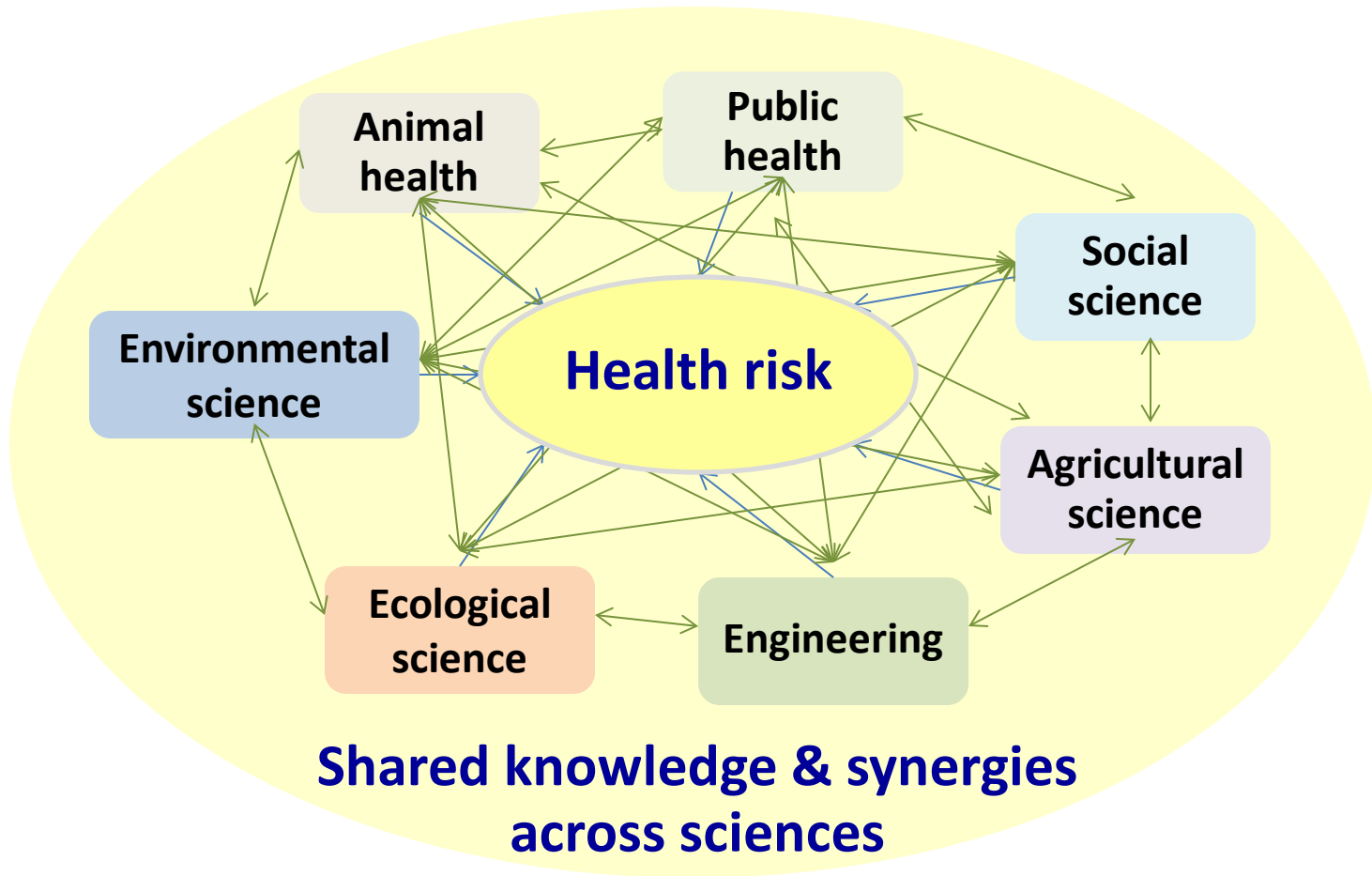


Snail control



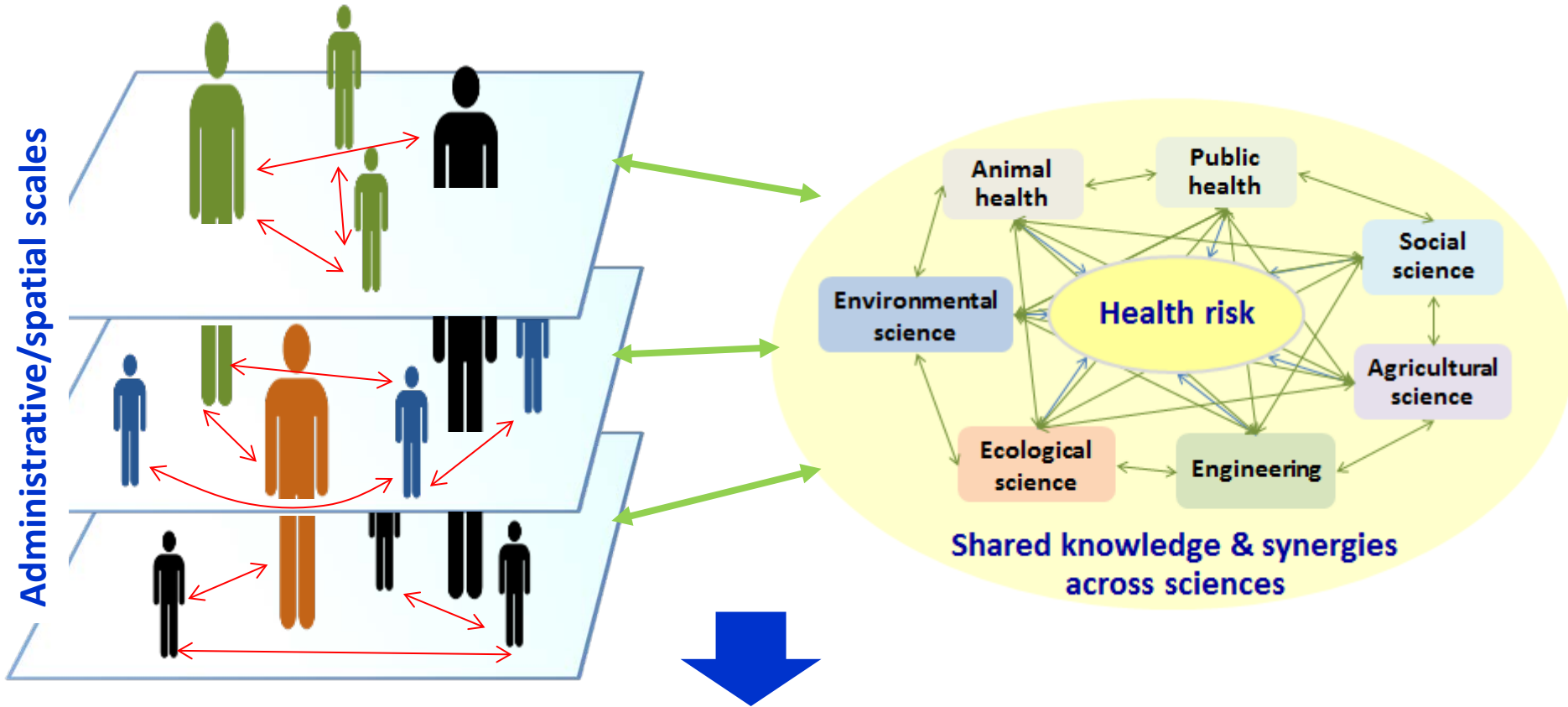
Modify snail niche





- Owner of the issues is not clear.
- Solutions far beyond technology and scientific knowledge.
- Require trans-discipline effort and cross-sectoral collaboration.

To Come-Across multi-level-arena, cross-sectoral OH issue



Mutual learning & understanding, support, collaborate, networking, capacity building, and collaborative action for better management.

One Health challenges

“Inter/Tran-disciplinary framework” :

- Facilitate/enhance such an understanding toward such complex OH issue.
- Strengthen capacities, facilitate interaction and dialogue among disciplines and key actors.
- Through cross-sectoral collaborative platform.



Companion Approach for Cross-sectoral collaboration in Health risk management in SEA

EuropeAid INNOVATE One Health in Asia

Funded by the European Union under the INNOVATE programme



Implemented by:



ComAcross in SE-Asia

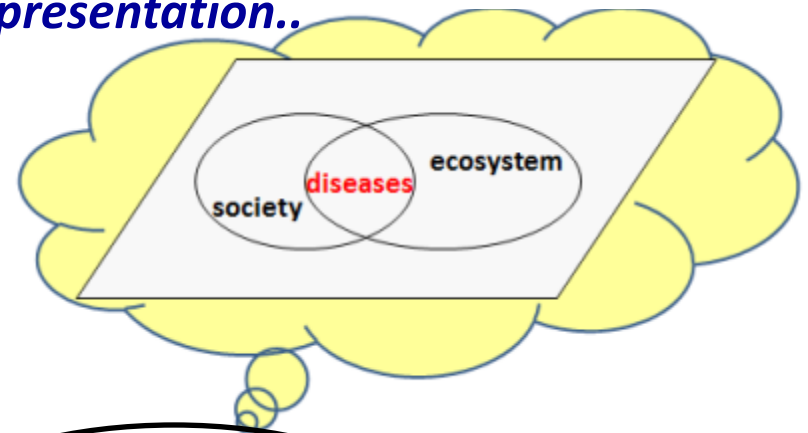
- Combining resources and expertises to implement *One Health* actions at the forefront of research and capacity building in SEA.
- By implementing an integrated, holistic, and operational approaches relying on **participatory approaches**.
- And facilitating **cross-sectoral collaboration** among key sectors.
- Four OH cases are under studied:
 - Encephalitis: Cambodia and regional long-term study on JEV and Nipah Virus (Cambodia)
 - Zoonotic diseases of livestock with a focus on parasitic diseases (Laos)
 - Water & waste management and health (in Thailand)

.. a common representation..

Companion modeling approach

..to co-construct..

From individuals' representations...



Representation & need



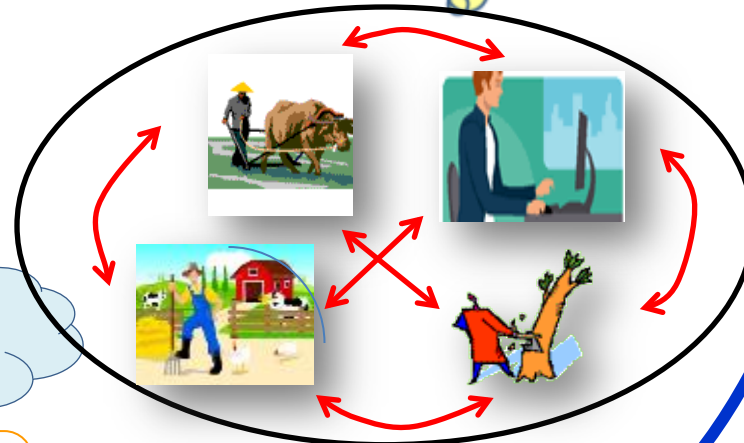
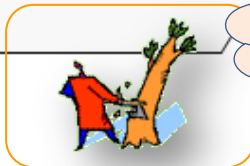
Representation & need



Representation & need



Representation & need



Exchanging point of view & knowledge

..perceive, aware modify individual one to facilitate collective action ?

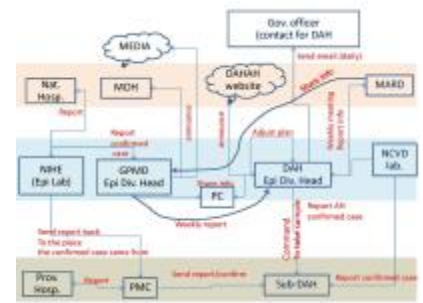
Changes / Outcomes

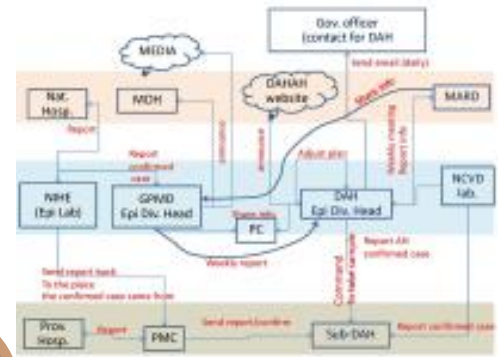
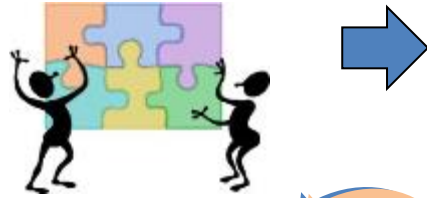
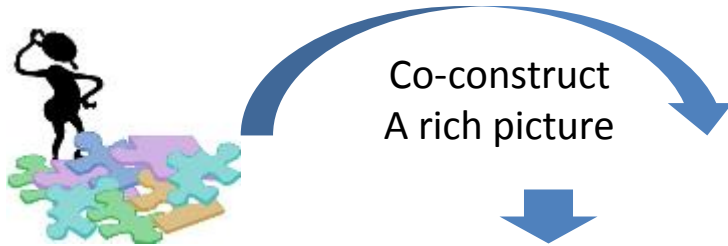


**Co-construct
a common representation
(a rich picture, better understand)**



**Proposition for
future improvements**





Conceptual model



“Here is what we want to be in the future”

Future improvements/changes proposition

**How to accomplish?
What to be considered?**

- Key actors, beneficiaries?
- Who should act, what action?
- How?
- Supporting/enabling factors.
- Output, outcome, consequences.



We need “Changes”

- What changes?
- Who changes?
- Change what?

Changes

- Perception & knowledge
- Capacity / skill
- Awareness
- Practice / action
- Collaboration of better situation

Initiatives

- Basic science research
- Model & simulation
- Good management & practices
- Policy/institutional intervention
- Capacity building
- Cross-sectoral collaboration

Participatory one health approach & tools

- System approach & system contextualization
- Participatory tools
 - Participatory epidemiology (PE)
 - Participatory rural appraisal (PRA)
- Agent-based modeling (multi-agent system, MAS)
- Role-playing game (RPG)
- Cross-sectoral collaboration platform

PARDI (or PARID or ARID)

A method for socio-ecosystem conceptualization

P*roblem* → *problem/issue of interest*

A*ctors* → *who involves/contribute to the issue*

R*esources* → *the relevant resources, Env. component*

D*ynamics* → *what are the dynamics of the system*

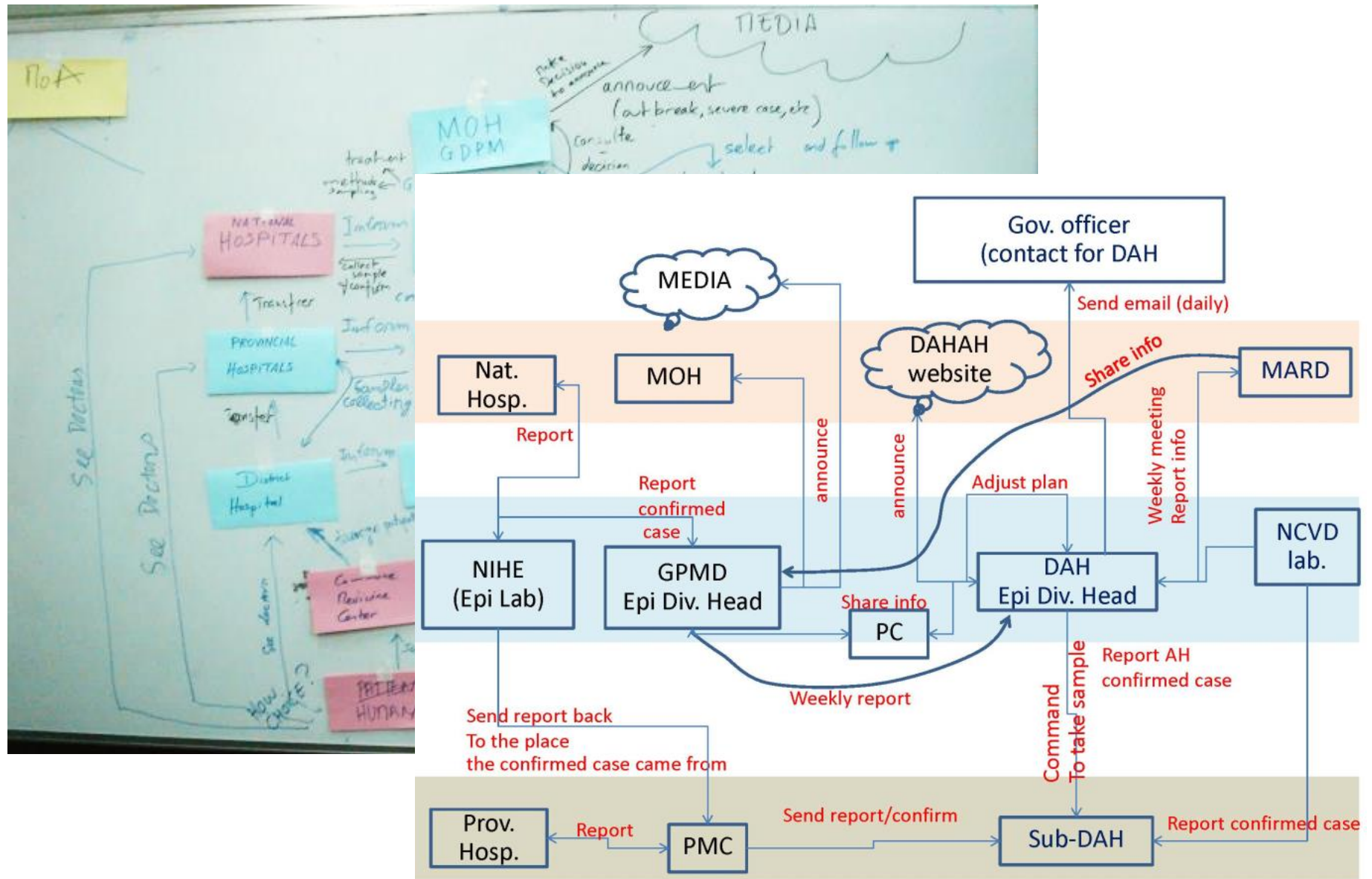
I*nteractions* → *How actors interact with each others/resource*



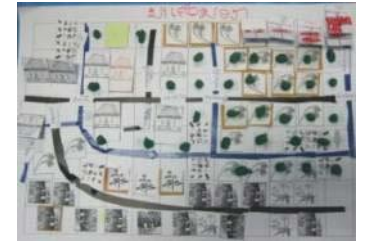
**Co-construct a common representation of the system
(system & situation analysis)**

Actor & interaction diagram

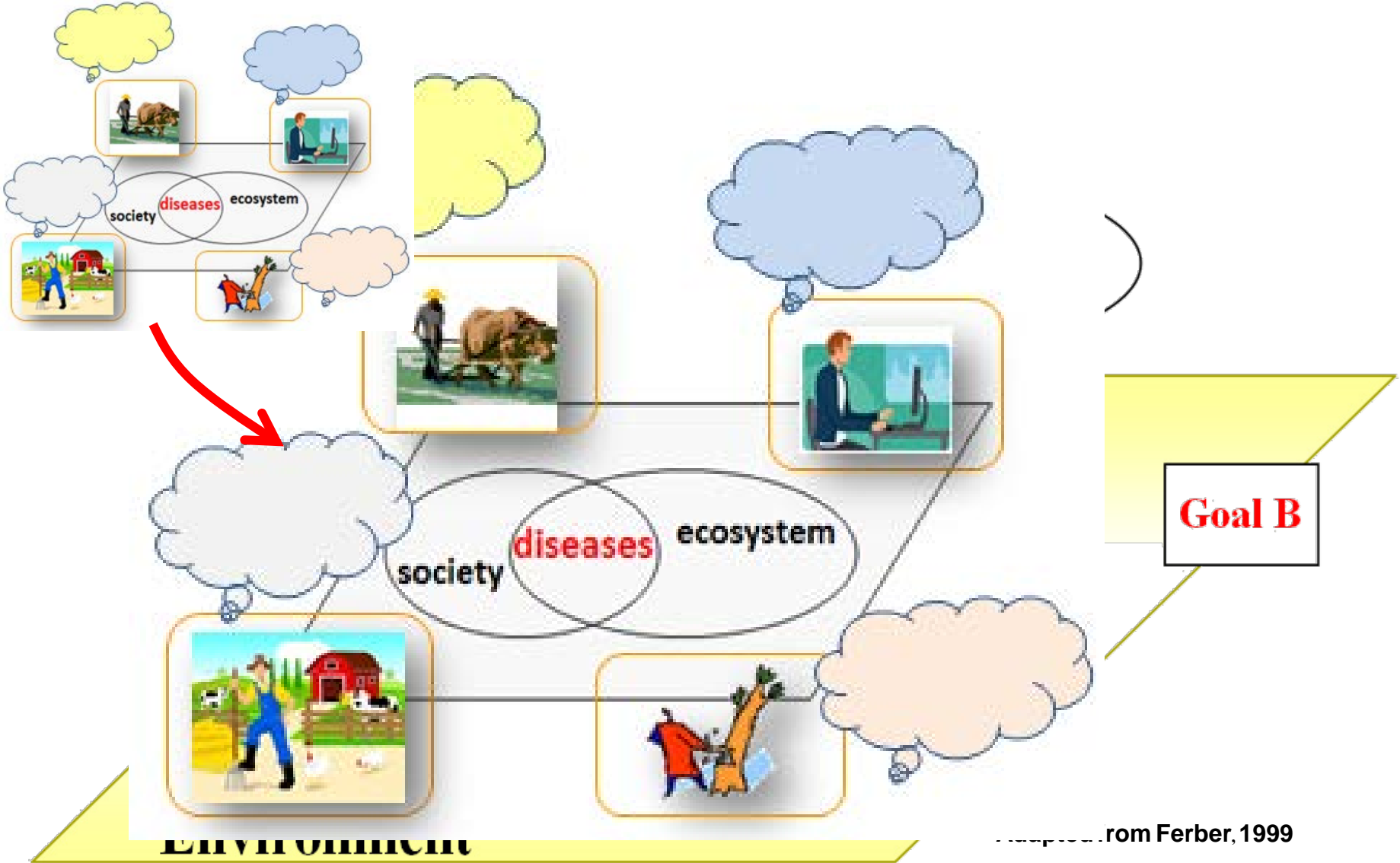
A method for socio-ecosystem conceptualization



Role-play game (RPG)



Multi-agent system (MAS)

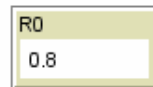
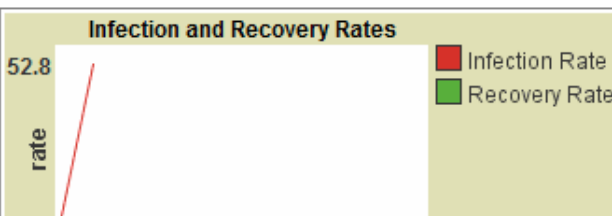
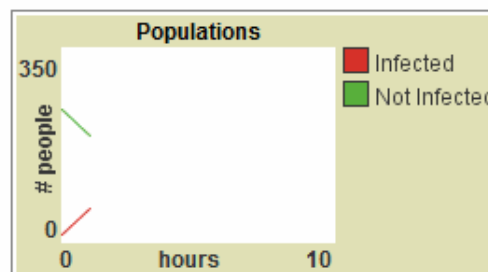
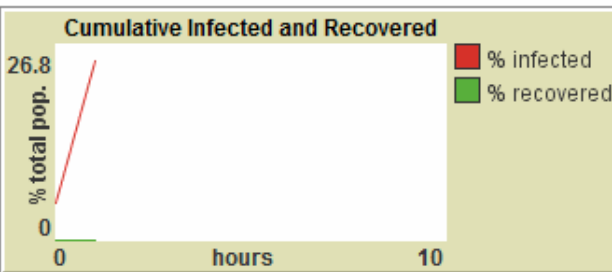
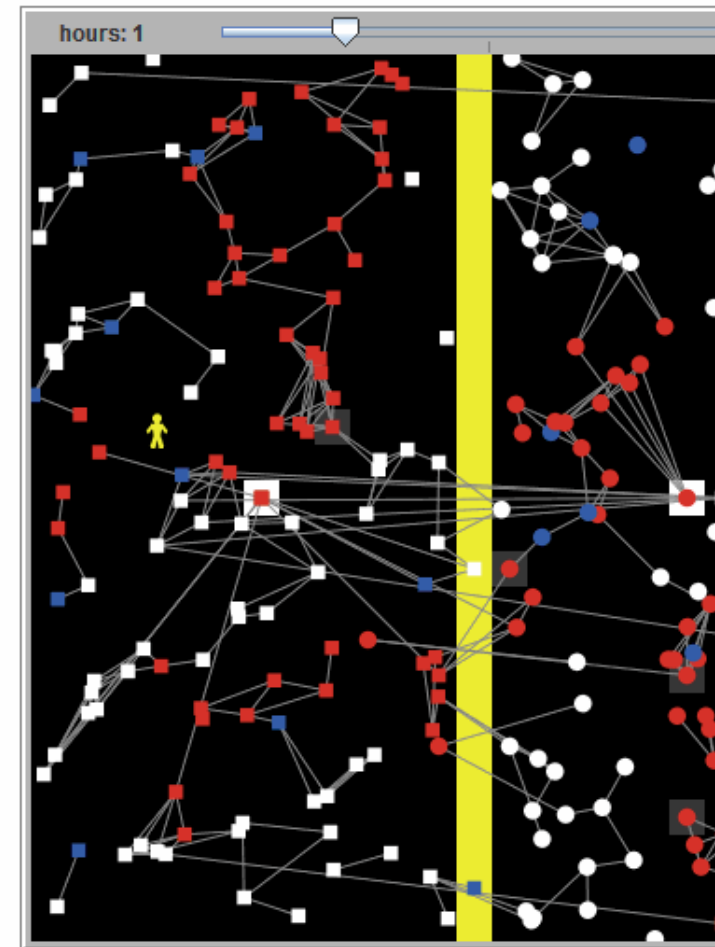
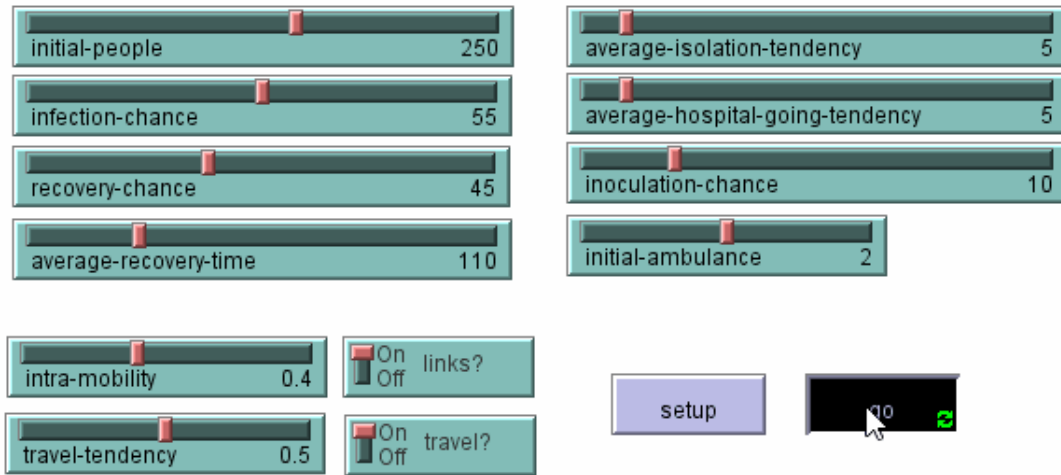


ENVIRONMENT

Goal B

from Ferber, 1999

Multi-agent based model & simulation

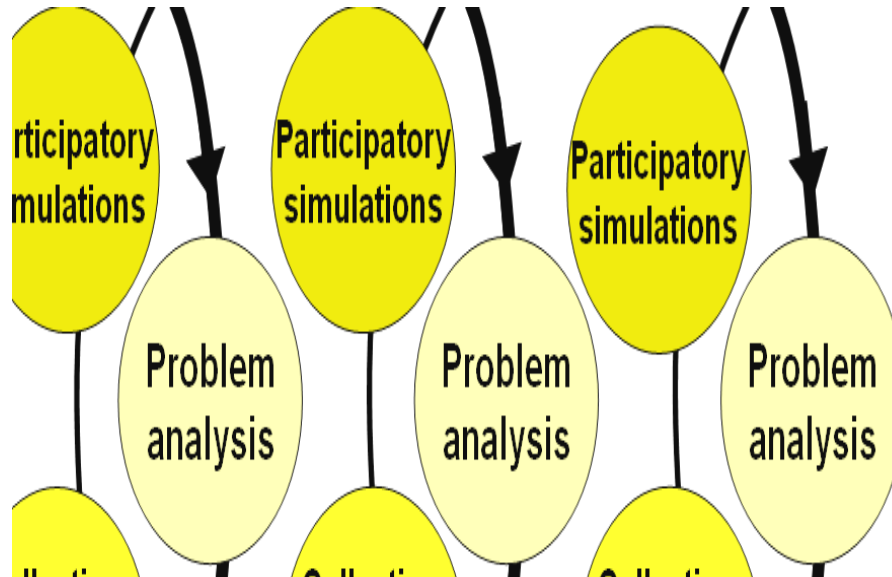


System conceptualization using PARDI & PRA

Role-playing game (RPG)

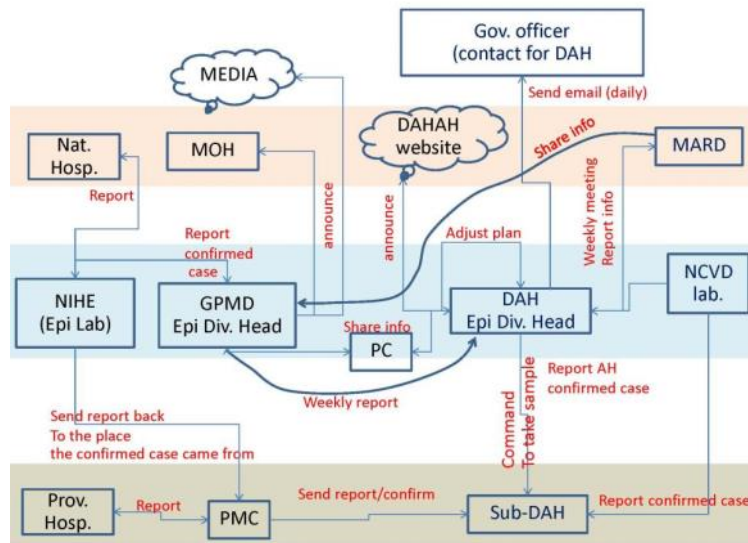
Agent-based Model & Simulation

Stakeholder management





**System science
&
Participatory approach & tools**
For system contextualization



The key actors (all?) are able to understand the “rich picture”



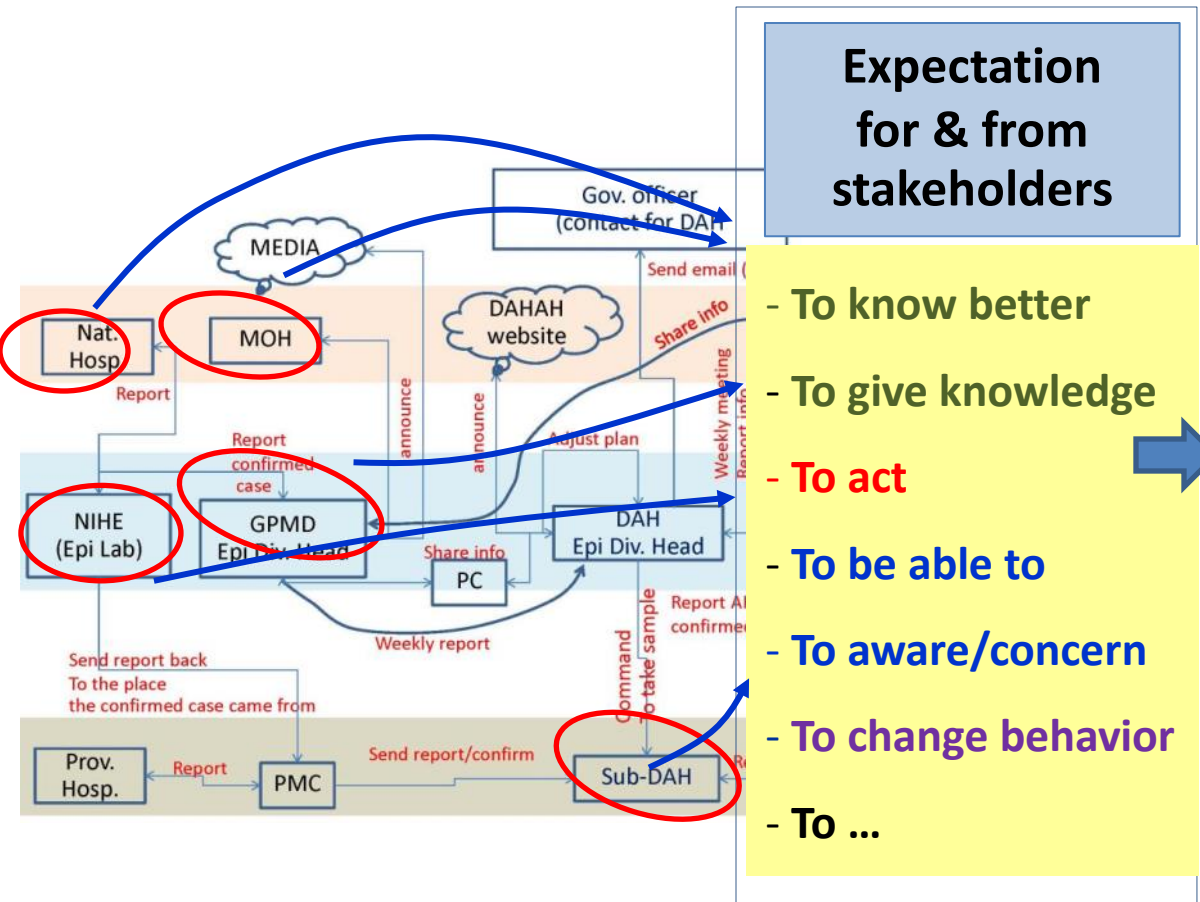
And collective hope what would be the desirable changes / future



How to support / enable the changes?

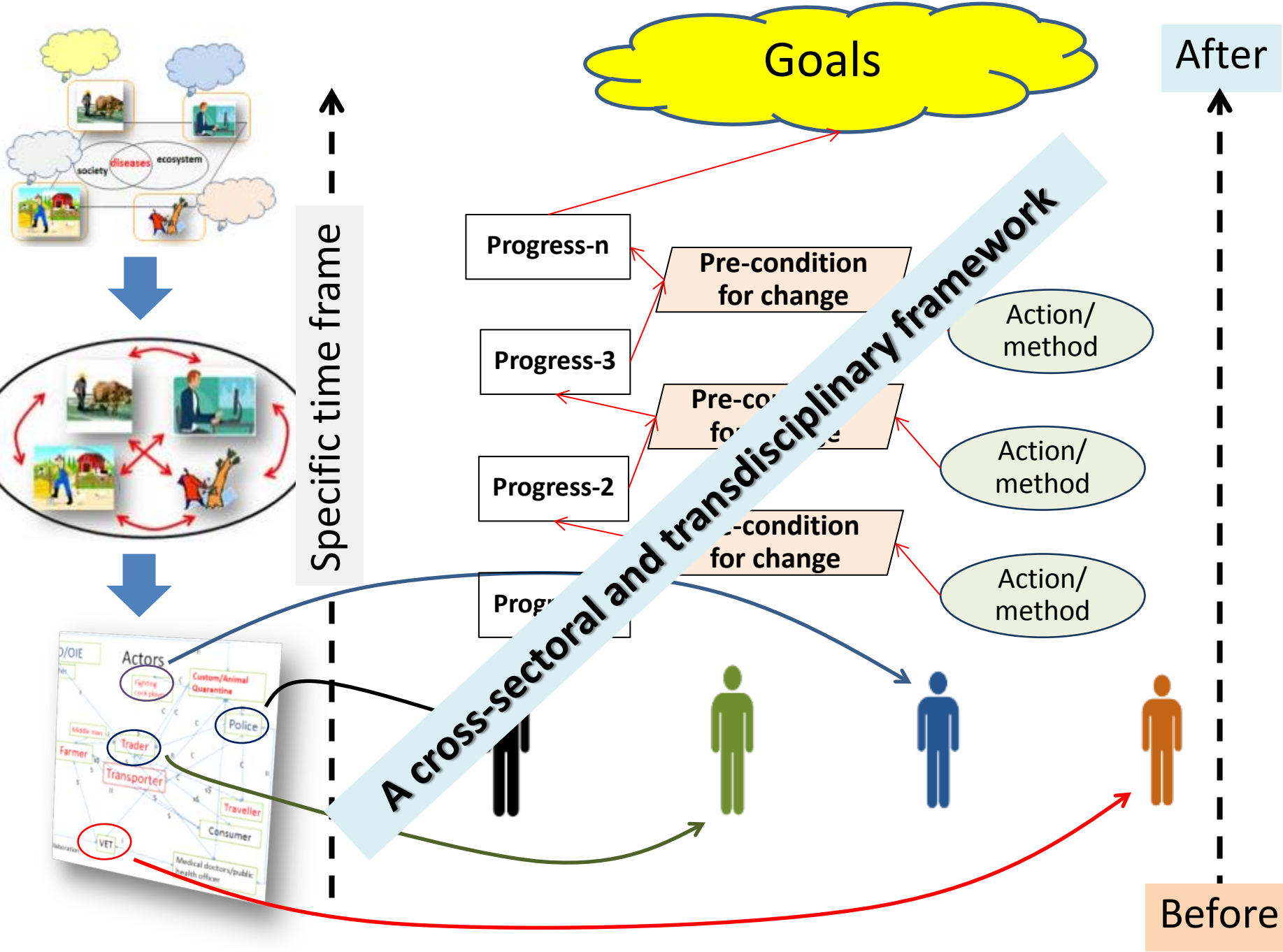
**Common/shared representation
Of the “rich picture”**

In order to support/enhance the changes (improvement)



How to achieve!!

- Giving info/tool
- Training
- Workshop
- Role-play Game
- Computerized model & simulation
- Bring in the influential people
- Supporting policy



Goals

After

Specific time frame

Progress-n

Pre-condition for change

Action/method

Progress-3

Pre-condition for change

Action/method

Progress-2

Pre-condition for change

Action/method

Progress-1

A cross-sectoral and transdisciplinary framework

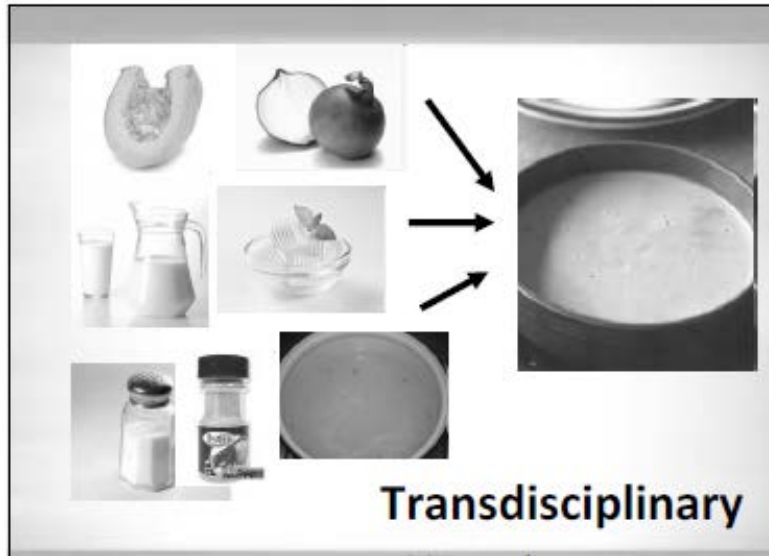
Before



Principles of the POHM

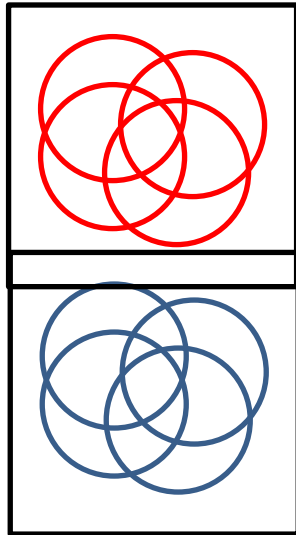
1. Collaborative problem identification and structuring between involved sciences and key stakeholders
2. Identify sub-component/system and investigate their interconnectedness through integration of disciplines and participation of involved stakeholders accompanied by 'models'.
3. Bringing result to co-construct common understanding among diverse view points.
4. Agree upon desirable 'changes' and 'future'.
5. Integration of approaches, methods & tools, enabling factors for desirable changes
6. Changes/outcomes emerge along the "learning by doing" process.

Transdisciplinary effort

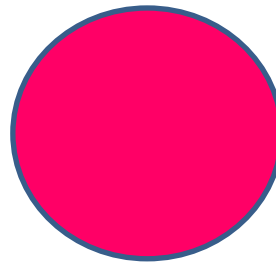
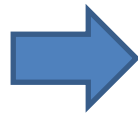


Source: Nattaya Pилanthanon

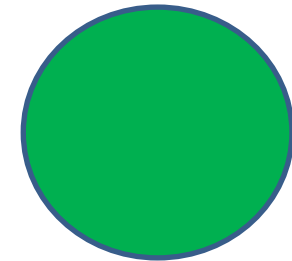
Non-scientific
arena



Scientific arena



New knowledge
& understanding



Research into use & changes

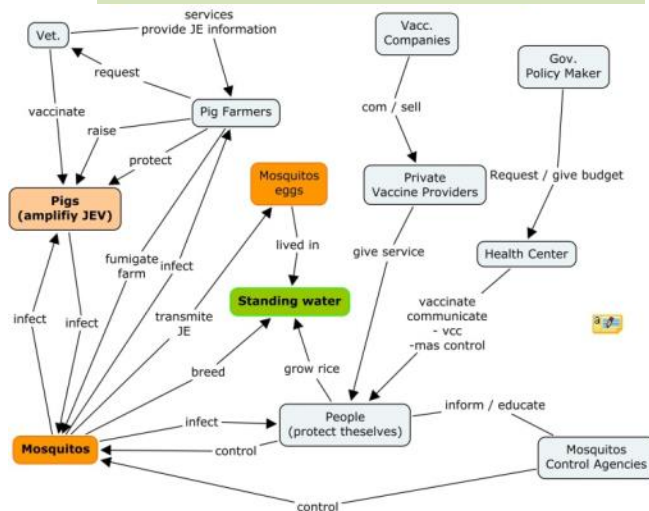
Cambodia: Japanese Encephalitis & Nipah virus

System conceptualization

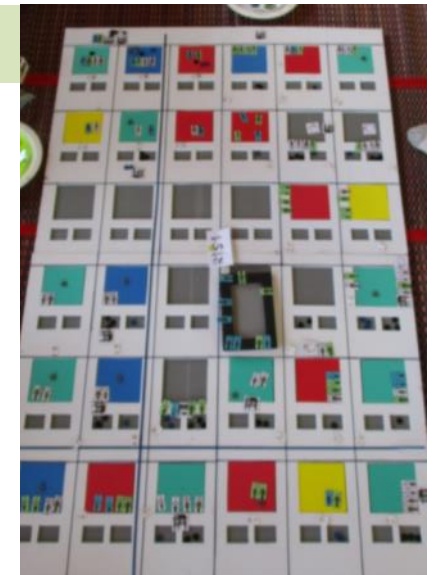
- Improve our knowledge of health management at the local level.
- To change of risk behaviour and reduce the risk of disease transmission.
- Understand how the Information is managed and transferred from local to national level → better management.



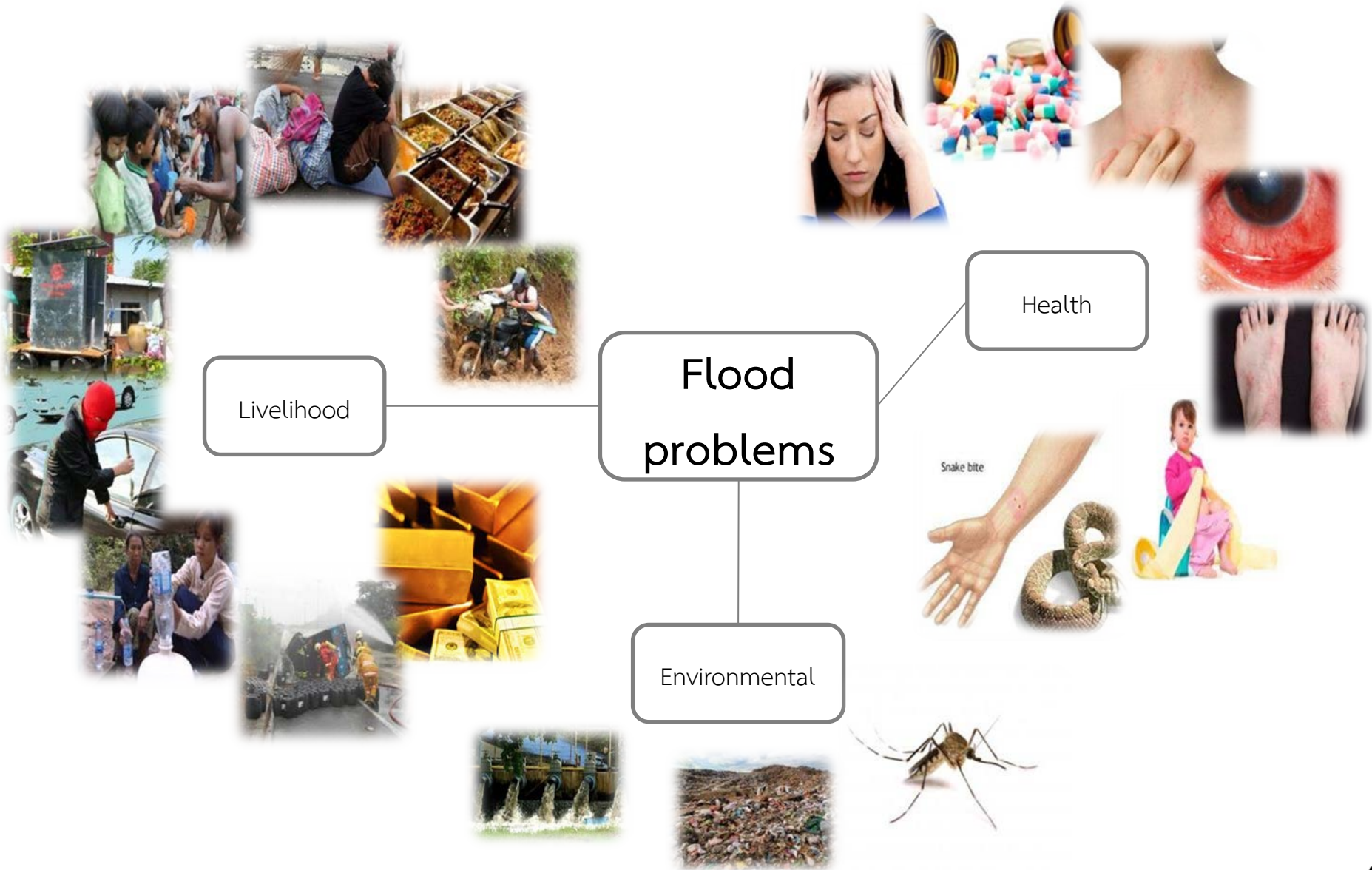
System conceptualization



Role-play game



Thailand: Water, waste and health management



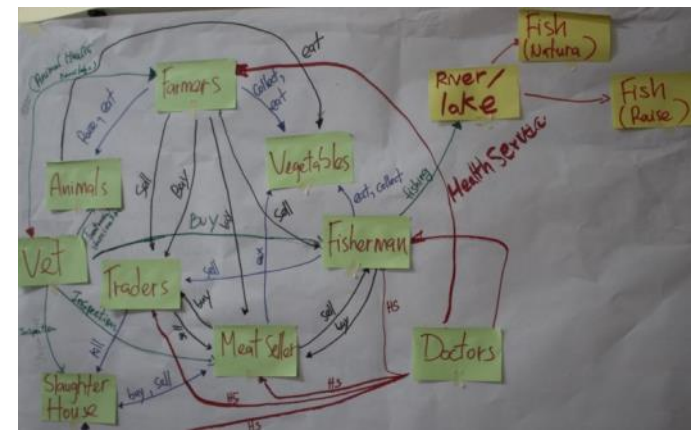
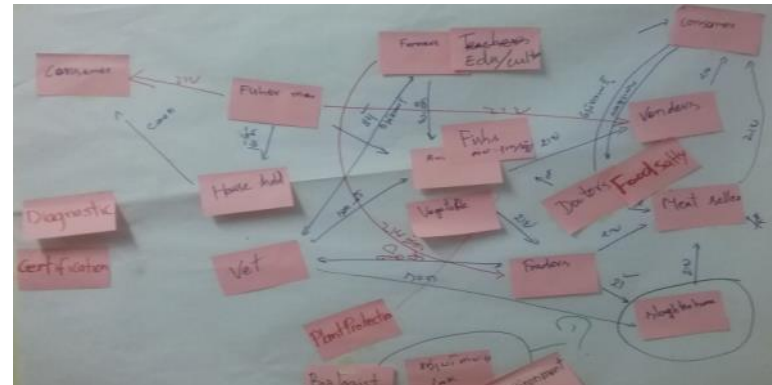
Participatory and collaborative processes



Laos: Parasitic food borne diseases

- To assess parasitic zoonoses distribution,
- To assess risk-related perception, knowledge and practice.
- To develop a cross-sectorial collaboration platform and dissemination strategy.
- To reduce the risk and improve animal and human health.

System conceptualization



Laos: Participatory epidemiology (PE) & Participatory rural appraisal (PRA)



National inception meeting among 4 key ministries and other partners



- Progress presented
- Steering committee and monitoring process established

Laos: Stakeholders analysis and management

<u>The Rainbow Framework</u>	4) The objectives of your intervention with each participant in the logical order in which you want to get : What changes/progress would you like to reach?					<u>BLACK:</u>	<u>GREEN:</u>	<u>BLUE:</u>	<u>RED:</u>	<u>PURPLE:</u>
	1	2	3	4	5					
Scientists	Better knowledge on distribution of the disease, .	Better knowledge on stakeholder perceptions and practices	Develop suitable practice and control options	Interdisciplinary collaboration	Capacity building	Only needed to be present	ing knowledge, information, data...	v, practices, leaning by doing, ...	Do such action	itudes, perceptions, behaviours...
People	Better knowledge and Perception	proper practice	Aware of PFBD							
Vet (para-Vet)	Better knowledge and capacity									
Medical Doctor	Better knowledge and capacity									

Strategic stakeholders management

<u>The Rainbow Spiral</u>	Which methods, tools and other actions matched to each key people and step? (Also apply an appropriate color)					<u>BLACK:</u>	<u>GREEN:</u>	<u>BLUE:</u>	<u>RED:</u>	<u>PURPLE:</u>
Steps of changes:	1	2	3	4	5					
Scientists	Better knowledge on distribution of the disease, .	Better knowledge on stakeholder perceptions and practices	Develop suitable practice and control options	Interdisciplinary collaboration	Capacity building	Only needed to be present	ing knowledge, information, data...	-how, practices, leaning by doing, ...	Do such action	itudes, perceptions, behaviours...
Which methods/tools?	1. Literature Review 2. Expert Opinion 3. Serological Sampling	1. PRA/PE 2. PE training 3. PRA/PE Analysis	1. workshop for developing suitable practice and control options	1. Meeting 2. Trainings 3. Study Tour	1.PRA analysis training 2. GIS 3. Sampling training 4. Trypanosome trianing					

Case studies: progress, output/outcome

- Common one health issue and sense of belonging.
- Engaging key- multi-level- stakeholders at the early state of the process.
- Interdisciplinary team & Transdisciplinary efforts
- Shared-learning.
- Capacity building & learning by doing
- Trust & partnership

Transdisciplinary efforts on OH-EH in SEA through ComMod approach and practices

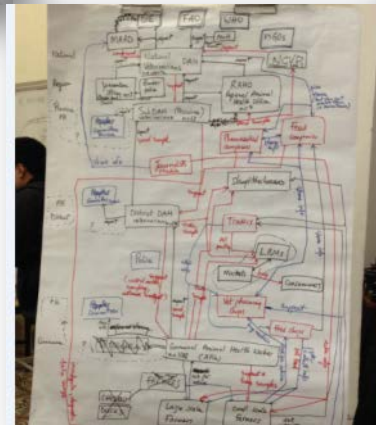


Laos



Cambodia

Thailand



Vietnam

