

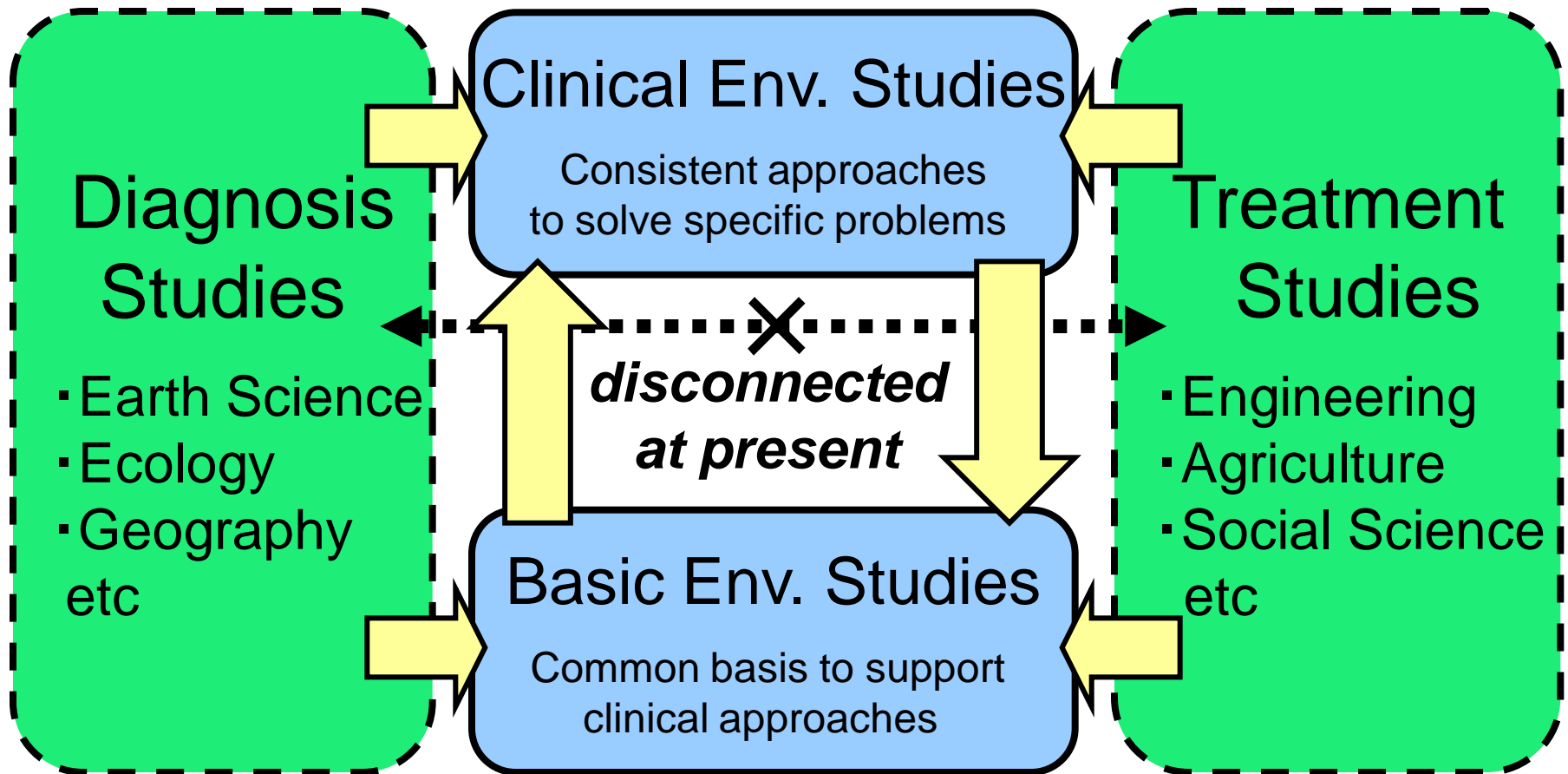
**Clinical and basic environmental  
studies in Nagoya University  
– a medical approach to solve  
environmental problems**

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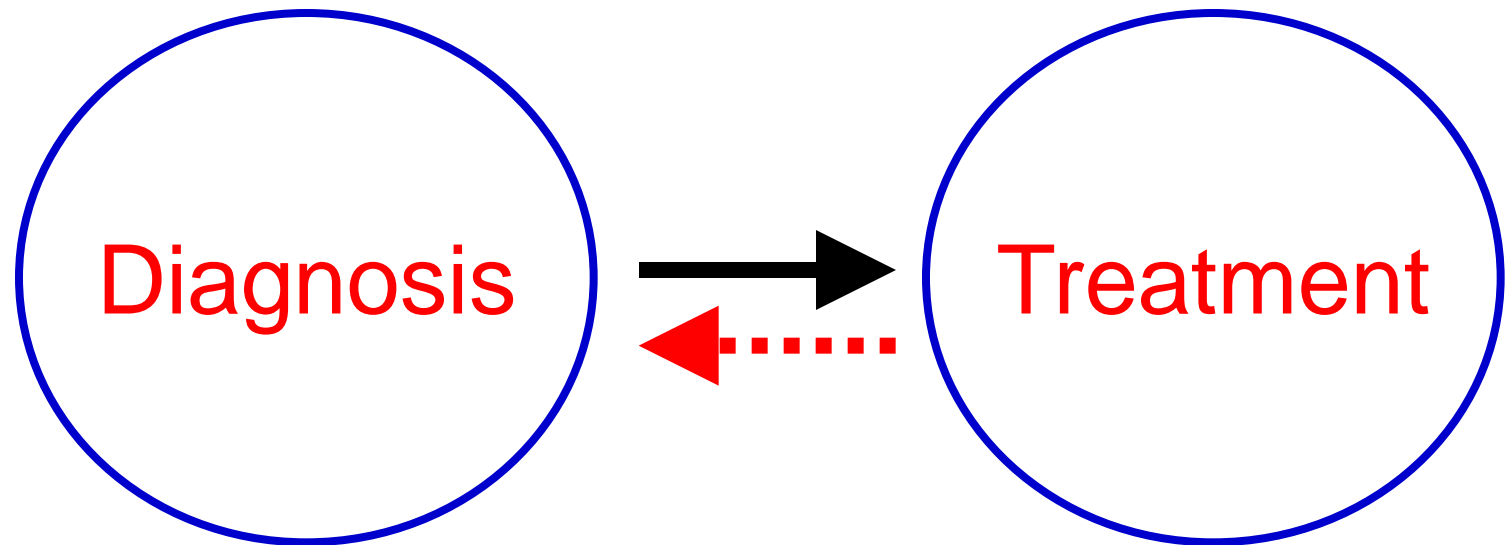
# Framework of GCOE-BCES in Nagoya Univ.

(Basic and Clinical Environmental Studies)



# Why is “Clinical Environmental Study” necessary ?

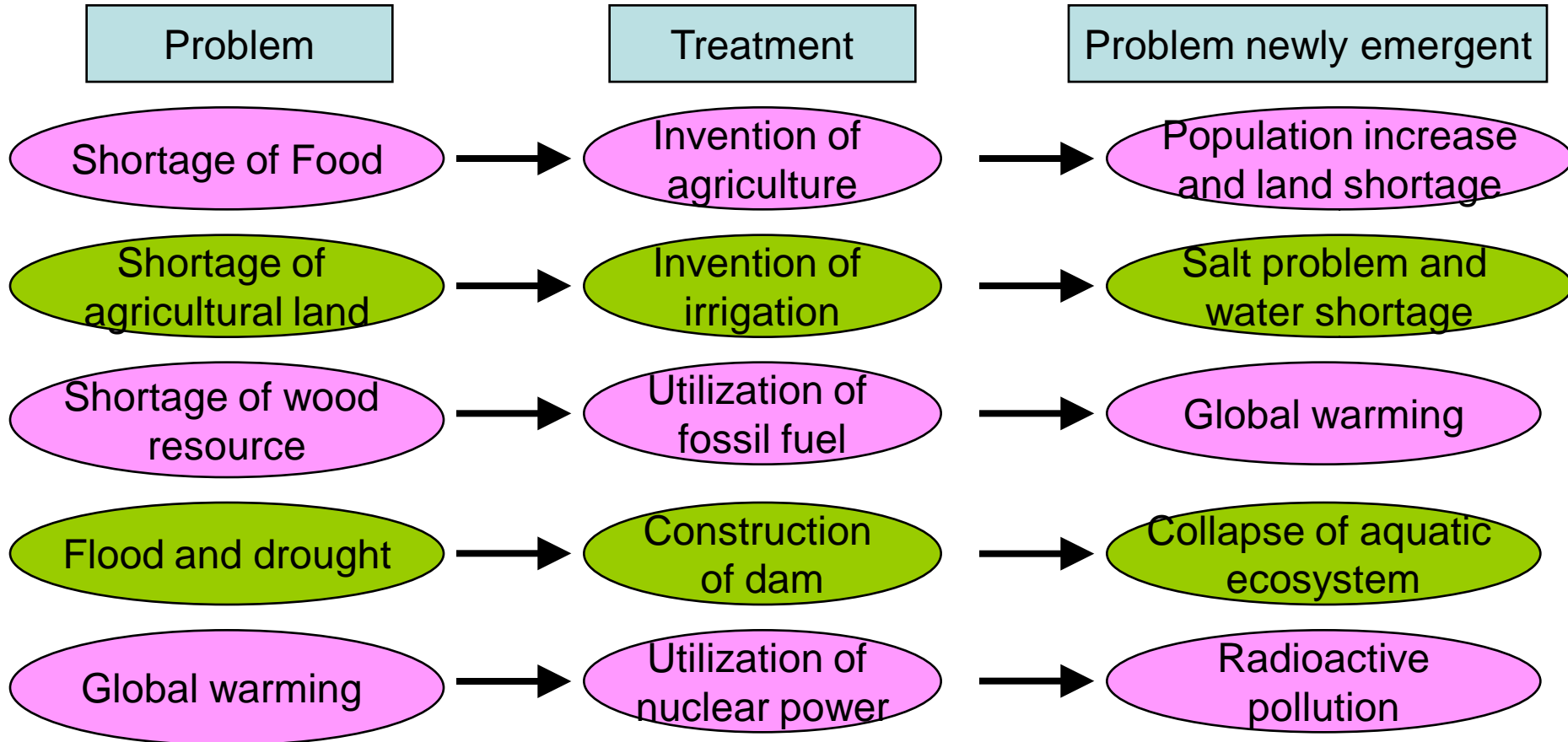
## Previous environmental studies



There are tight relations between diagnosis and treatment. However, they were **only one-way relations**, and both of diagnosis and treatment were **studied separately**. I think that we must carry out, not only **“Treatment based on Diagnosis”**, but also **“Diagnosis originating from Treatment”**.

# What does it mean to “treat” environmental problems?

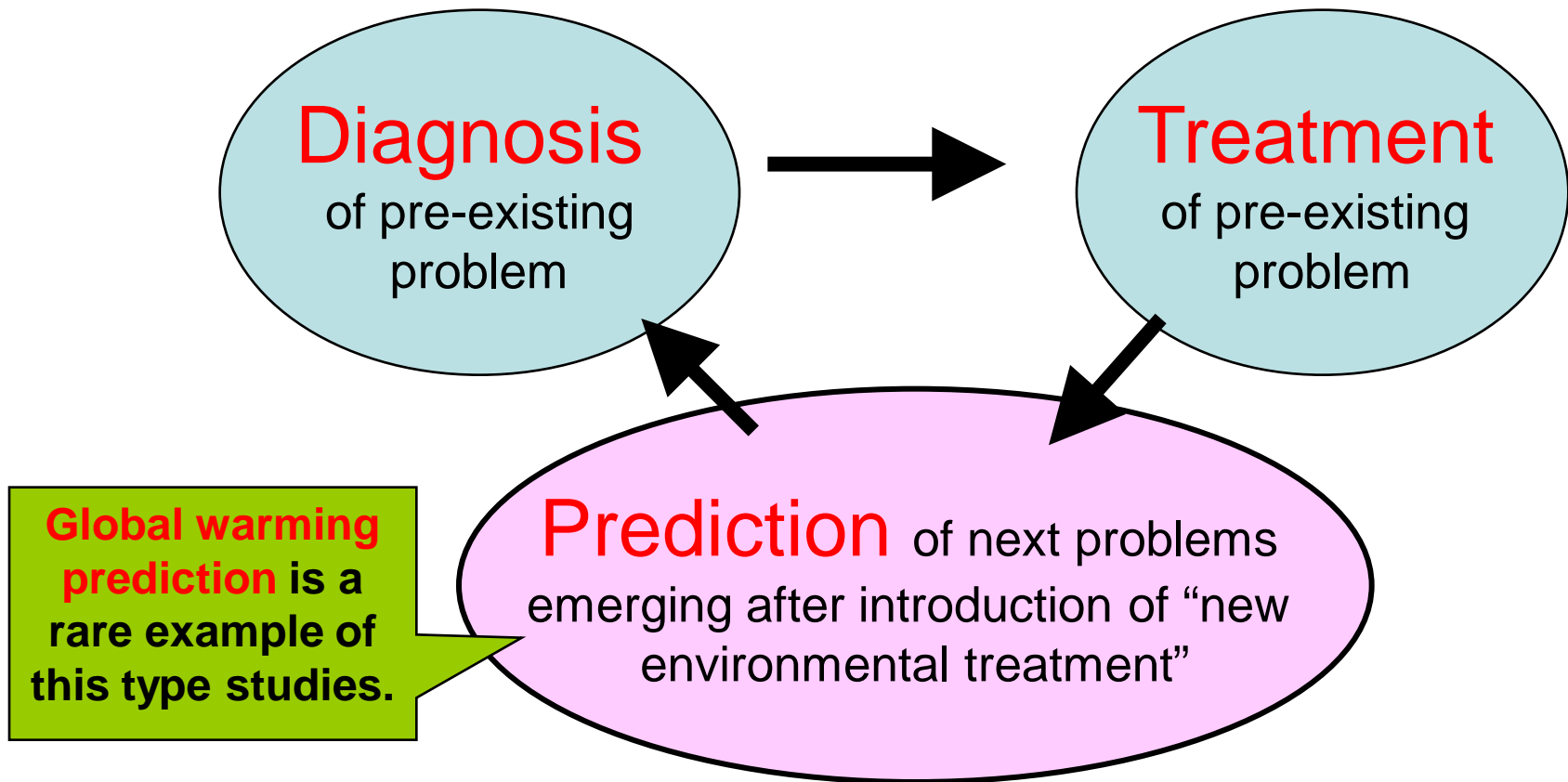
## -Views in human history-



In the human history, “new environmental problems” always emerged after introduction of “new environmental treatment” !

# How can we escape from the negative chains of environmental problems?

—Importance of “Prediction Type” of Environmental Research—



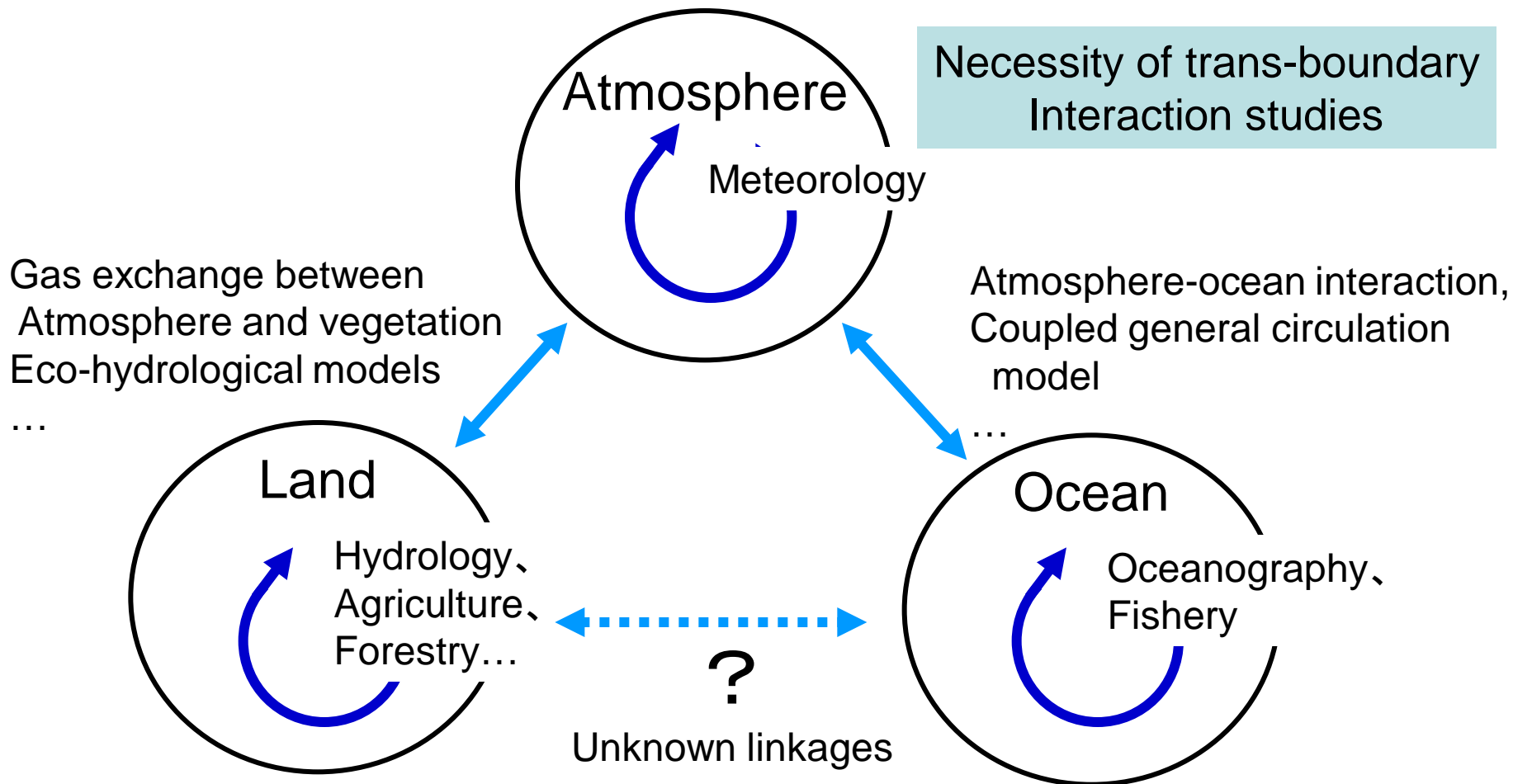
# How can we predict the next environmental problems emerging in the future?

1. Develop our understandings of nature, technology and society.

\*It is effective to seek “Security Holes” in our understandings about Nature, Technology and Society.

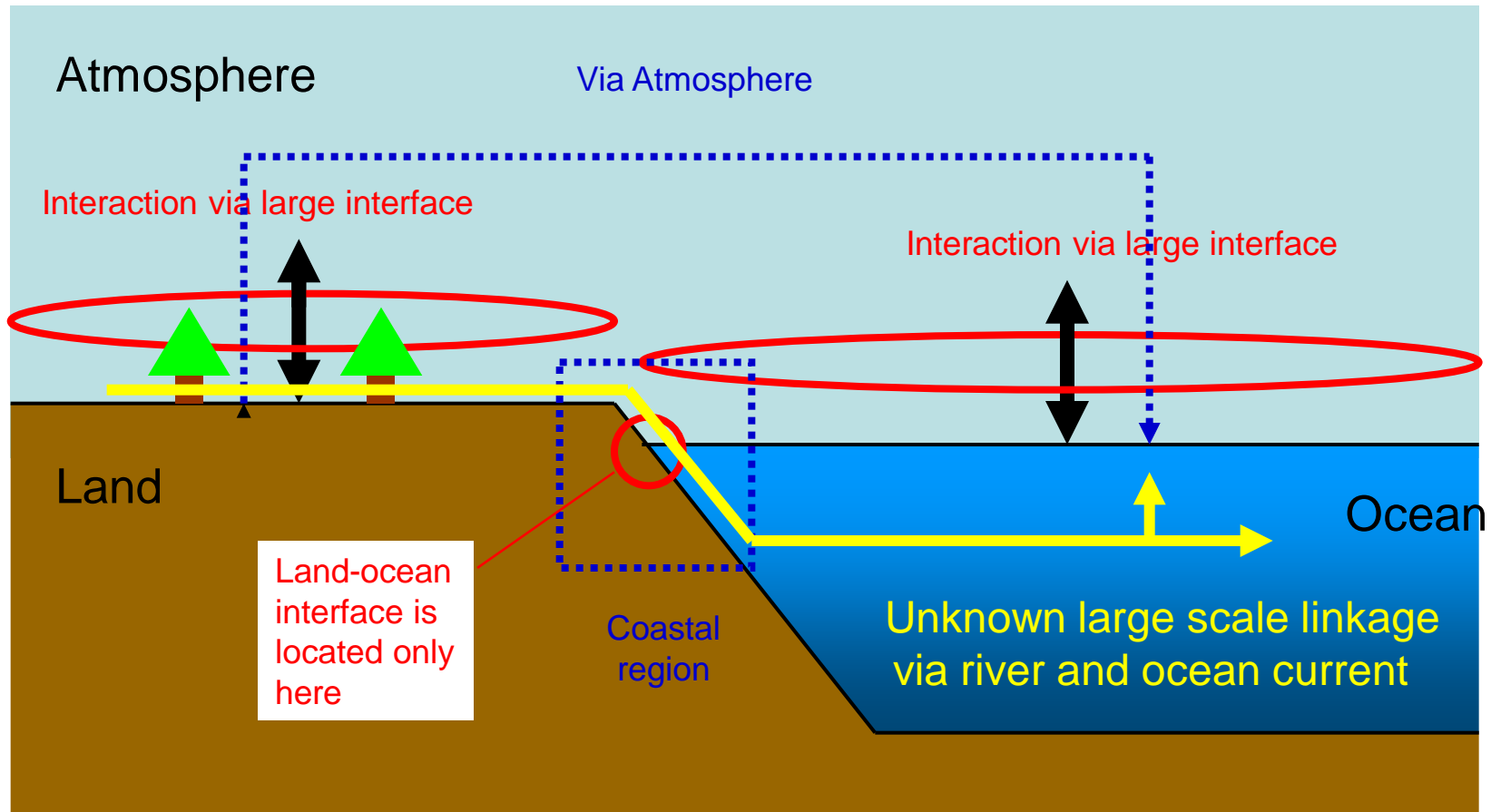
# How to find “Security Holes” in Our Understandings for Nature, Technology and Society

— An example : “Trans-boundary Problems” —



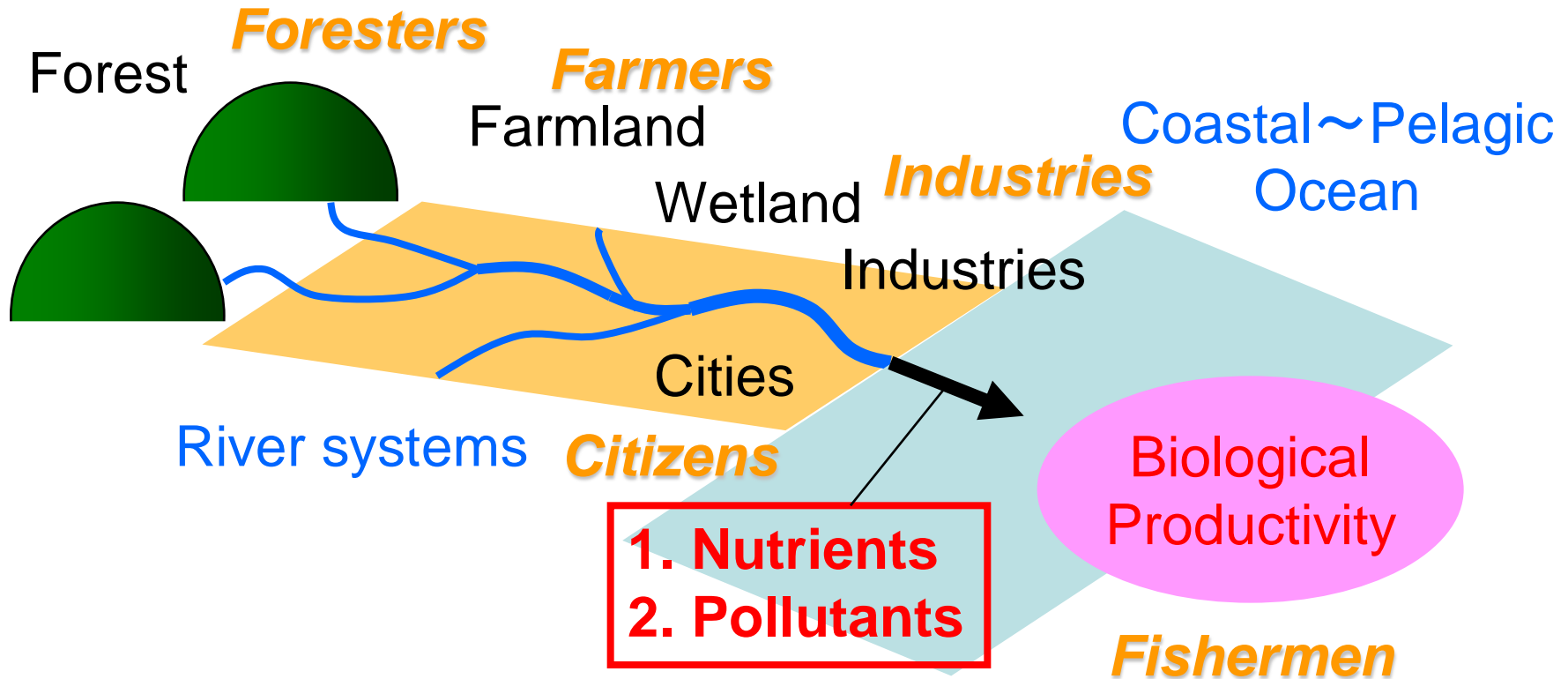
For a long time, Atmosphere, land and ocean have been studied separately.

# Reason why land-ocean linkages have not been fully investigated





# Material Transport from River to Ocean



1. Any **treatments in an area** may result in unexpected **damages in another area**.
2. It is difficult to manage the land-ocean trans-boundary system, because **many different stake-holders** take parts in this system **asymmetrically**.

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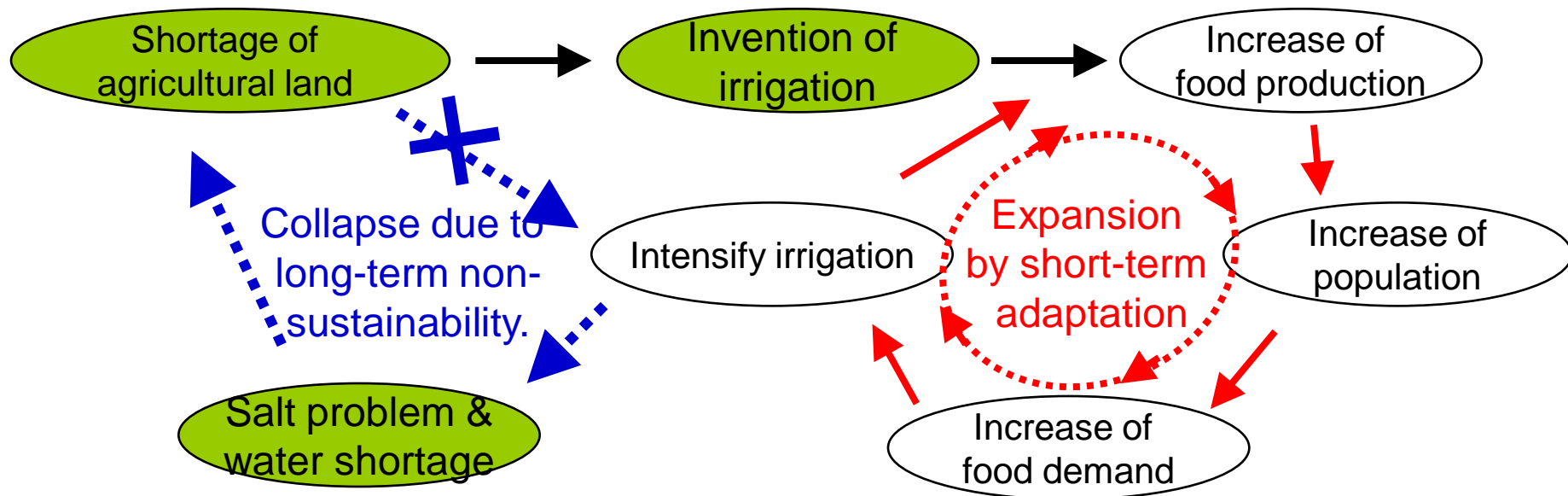
\*It is effective to seek “Security Holes” in our understandings about Nature, Technology and Society.

2. Detect the typical pattern of problem emergence .

\* Historical analyses of environmental problems must be helpful.

# What is the typical pattern toward the emergence of new environmental problem?

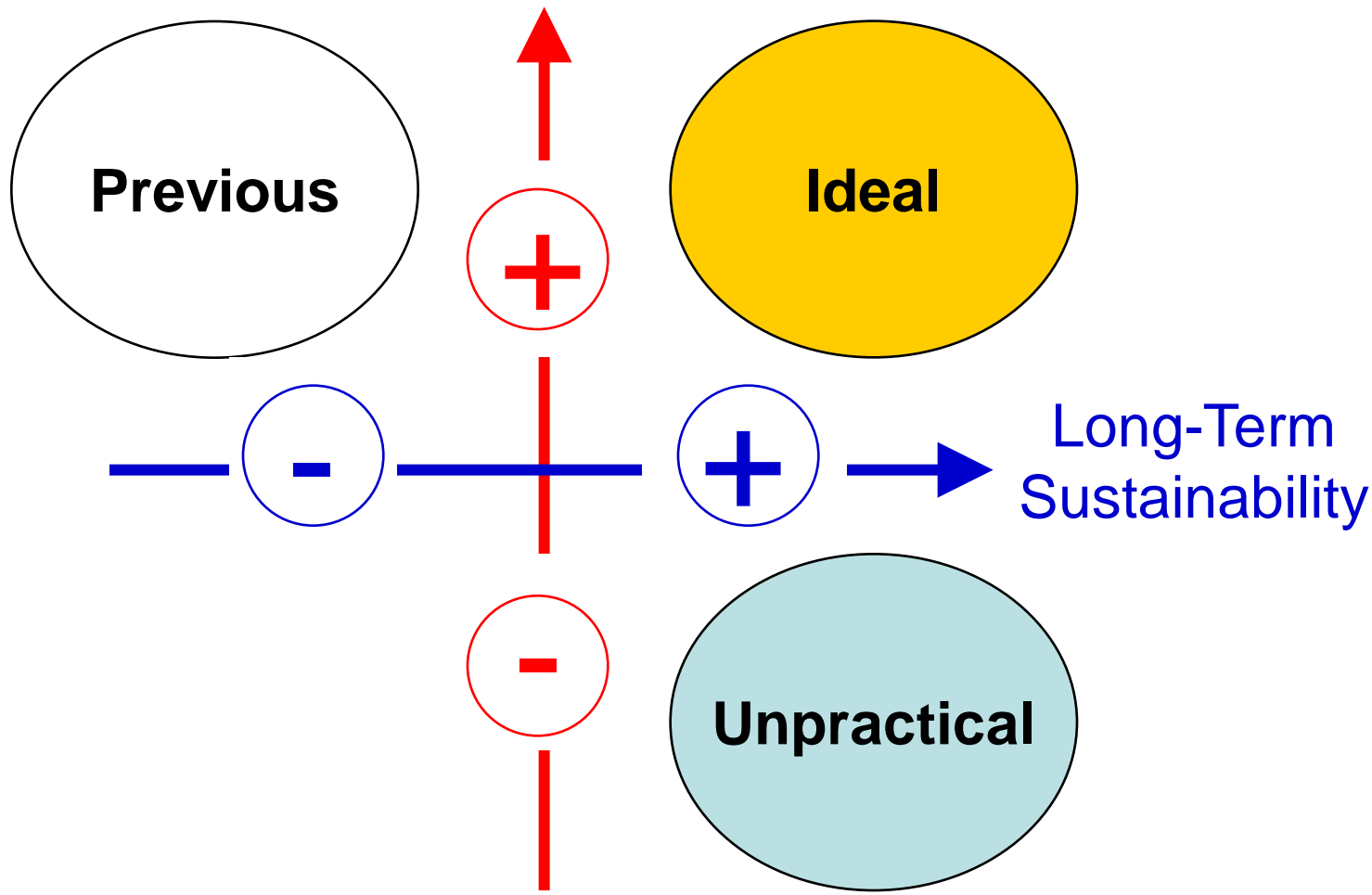
“Adaptive technologies or institutions at micro-scale” for environment often cause “Non-sustainable results at macro-scale” for environment



Evaluate present status of **environmental technologies and institutions** and consider logically **their future impacts and feedbacks** on environments themselves.

# Adaptability & Sustainability of Environmental Treatment

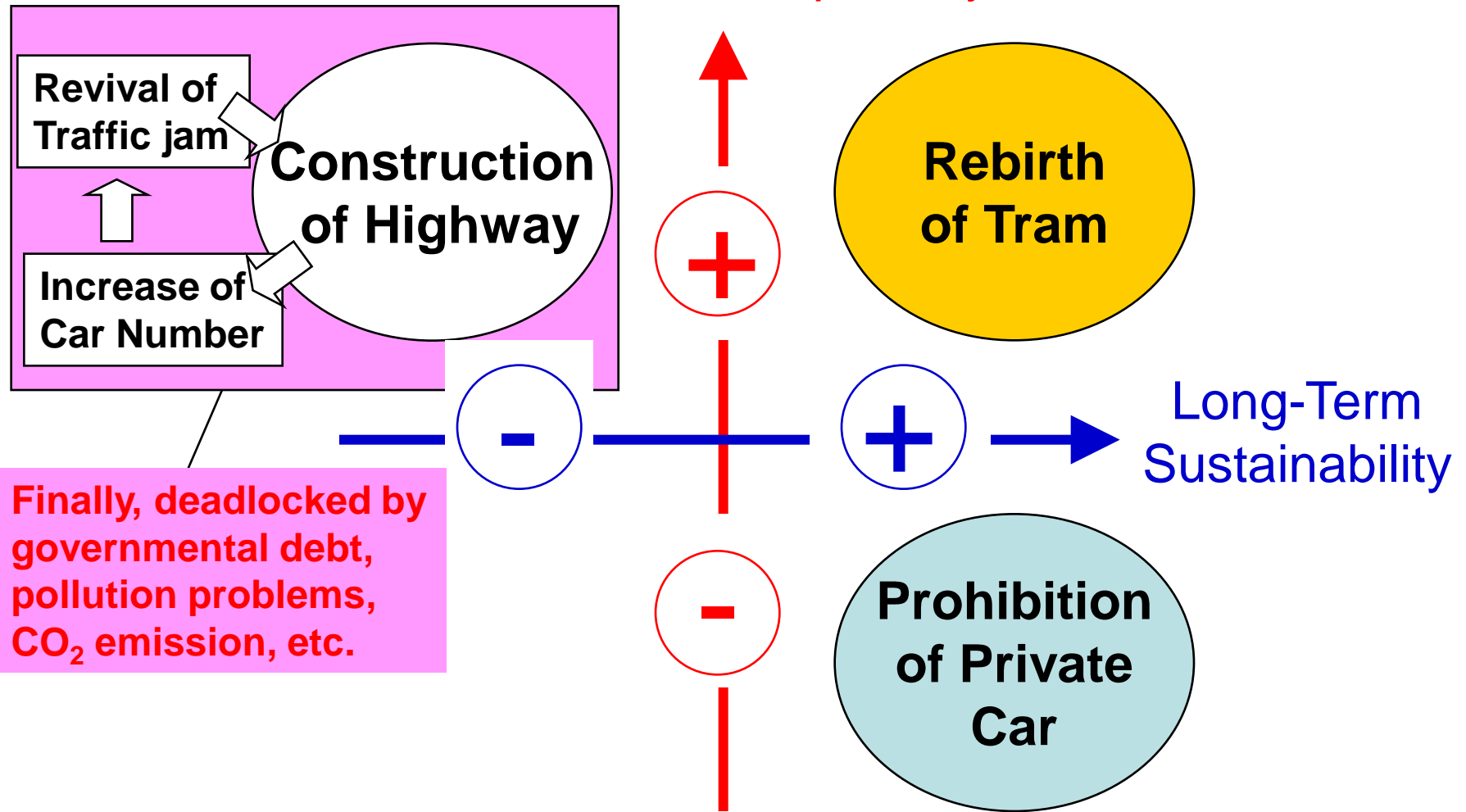
## Short-Term Adaptability



We must try to predict both of “Adaptability and Sustainability” of any Treatments for Environmental Problems, simultaneously.

# An example – “Traffic jam problem in a developing city”

## Short-Term Adaptability



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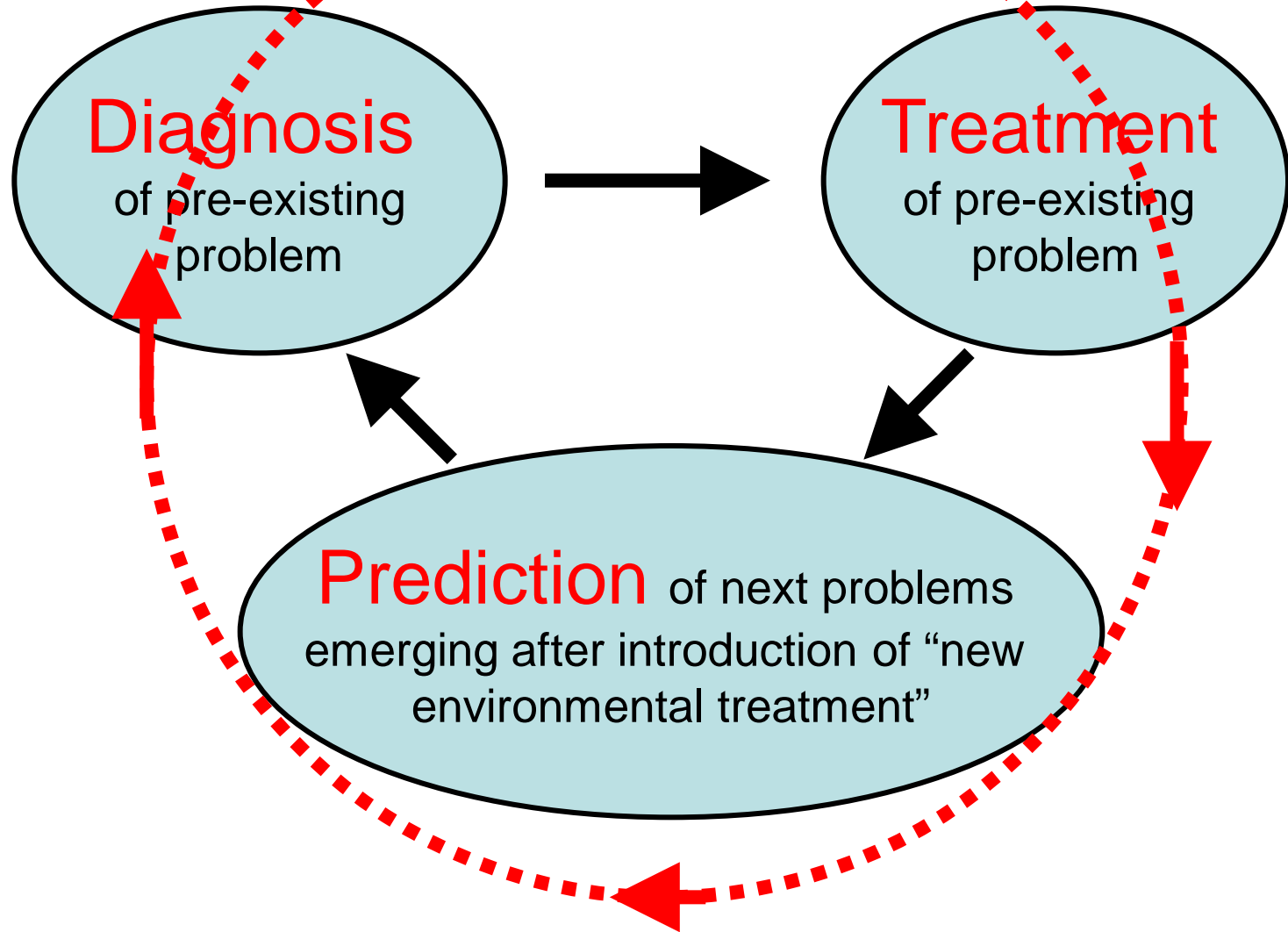
2. Detect the typical pattern of problem emergence .

\* Historical analyses of environmental problems must be helpful.

3. Collaborate between diagnosis and treatment.

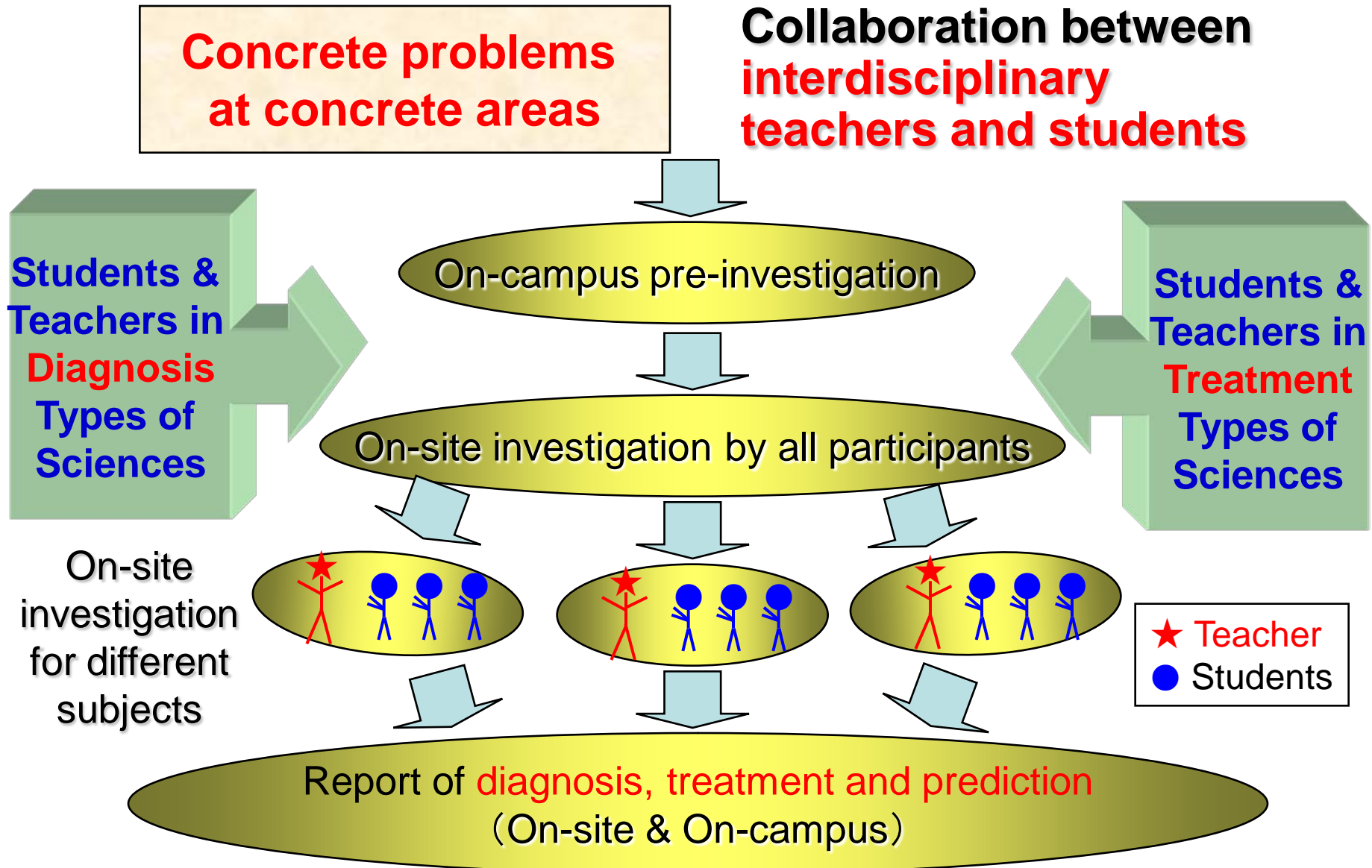
\* Without collaborations between them at “clinical field”, it is impossible to predict emergence of the future problem.

Practice of “**Hypothesis Rotation**” is necessary along Diagnosis-Treatment-Prediction Cycle for a concrete environmental problem at a clinical field.



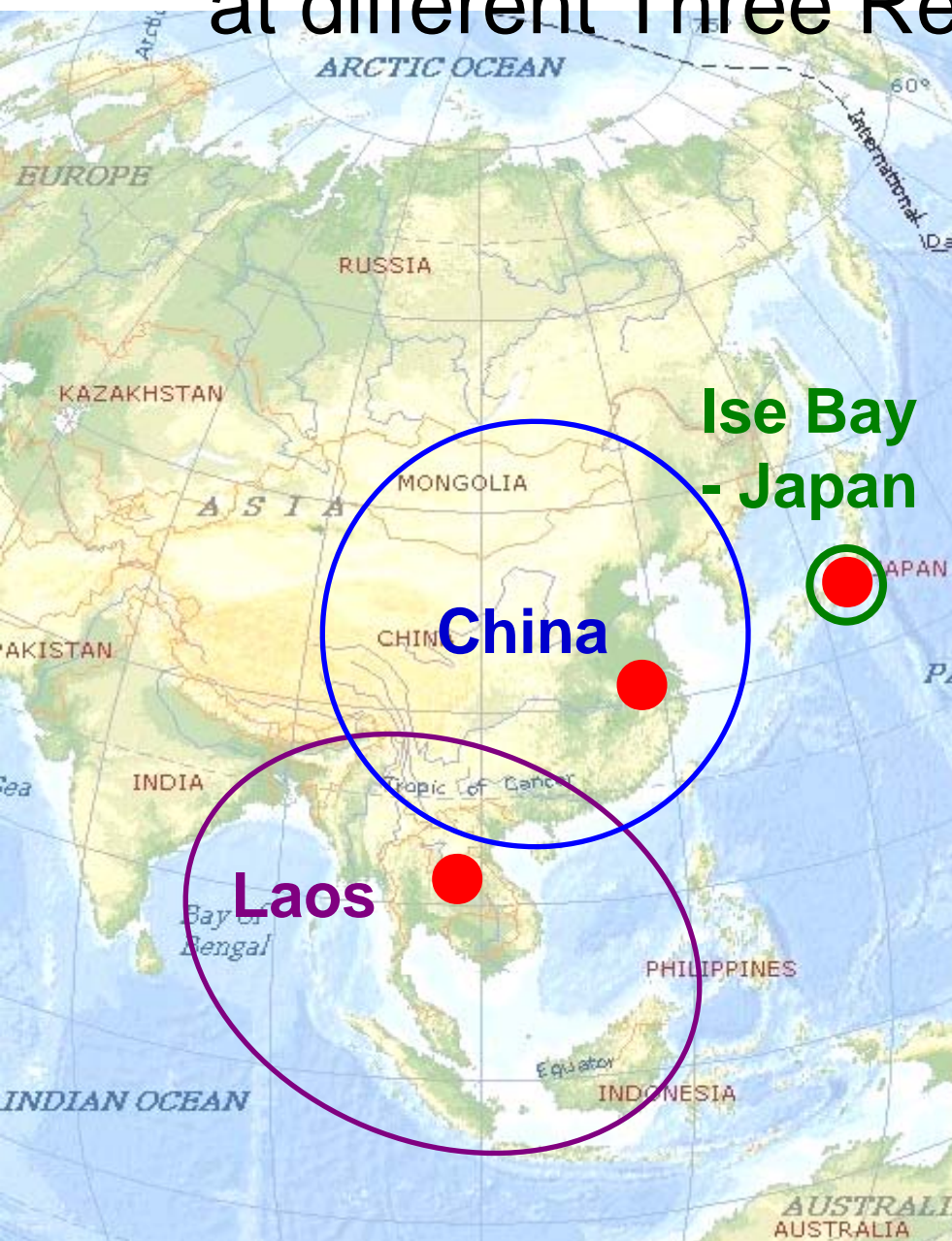
# On-site Research Training (ORT)

-The way to practice the **hypothesis rotation**-





# On-Site Research Training at Clinical Fields at different Three Regions in our GCOE



- South East Asia  
Less developed (Laos)
- North East Asia  
Rapidly developing (China)
- Ise Bay (Ise-Bioregion)  
Developed (Japan)

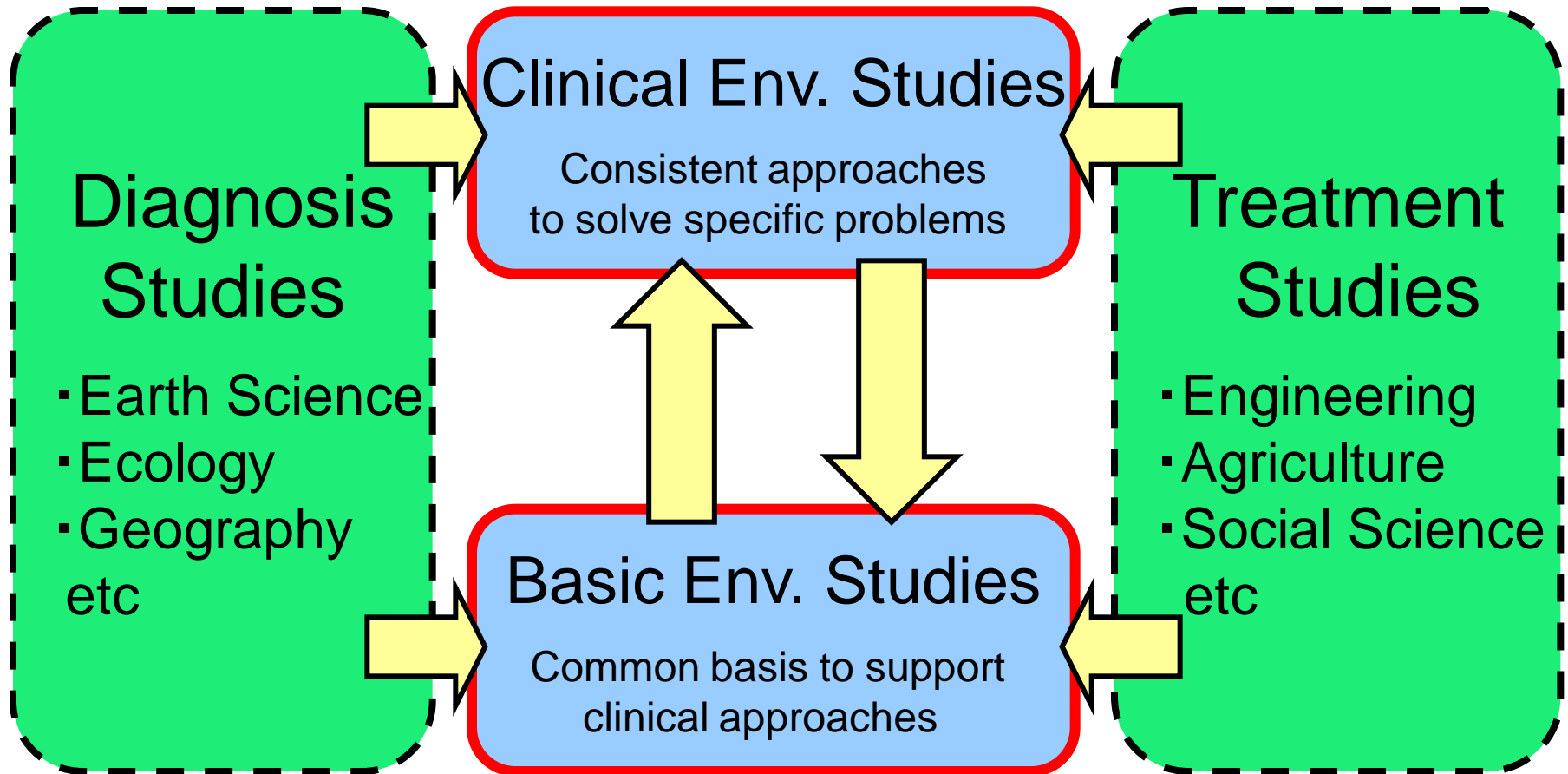
**Economically different  
stages of three regions**



**Diagnosing of concrete  
environmental problems  
and making of treatment  
plan for them at a clinical  
field, for future prediction.**

# Framework of GCOE-BCES

(Basic and Clinical Environmental Studies)



To educate PhD students in environmental studies for **real experts of making sustainable societies** in the world...