Experts and Stakeholders Views on Policy Options

Ways of Utilizing Science Knowledge: Transdisciplinarity vs. "Truth to Power"

The University of Tokyo
Hideaki Shiroyama
Makiko Matsuo

0. Introduction

- Focus of this presentation

  Yesterday: Critical issues⇒Mode of governance

cf. independent scientific assessment vs. transdisciplinarity

  Today: Policy options – governance/institutional options

- Mode of governance : Ways of utilizing scientific knowledge (role of government, stakeholders and scientists)→4 types: different range of stakeholders involved + different mode of interaction
- Mode of governance (especially range of stakeholders involved) and scope of issues – meta reflection on critical issues

1. Mode of Governance
(Roles of Government, Stakeholders and Scientists)

1. Mode of Governance

(1) Discretion by Government

- Scientists as advisers or consultants – scientists "on tap" cf. advisory councils
- Issues are framed by government
- Different scientific opinions are identified and selected by government
- Identification and selection is discretional decision by government – not transparent
- Concerns of stakeholders can be incorporated informal way – not transparent

1. Mode of Governance

(2) "Truth to Power"

- Initiative (issue framing) is taken by scientists
- Academic culture's policy to inform
- Independent scientific assessment – scientists "on top" – it is thought to be necessary based on the assumption that government dose not necessarily recognize issues voluntarily
- Reorganizing knowledge (interdisciplinary)←→co-producing knowledge (Pohl 2008)

1. Mode of Governance

(2) "Truth to Power"

Cover of "Our Nutrient World"

This Global Overview has been prepared as a scientifically independent process. The views and conclusions expressed are those of the authors, and do not necessarily reflect policies of the contributing organizations. As an overview, this report does not attempt to reach consensus on all issues. Its purpose is to raise awareness of the challenges, pointing to possible options. It is hoped that the report will stimulate further collection of evidence and trans-disciplinary dialogue with all stakeholders as necessary future steps.

1. Mode of Governance

(2) "Truth to Power"

- There can be hybrid form (between (1) and (2))
- Ex: IPCC

Intergovernmental Panel: "Intergovernmental nature"

Attention to geographical balance of members

Process of writing report

①Policymaker summaries which are extensively reviewed and approved line by line by governments

②The underlying reports which have extensive expert and government review but not subject to line by line approval

1. Mode of Governance

(3) Public Private Partnership

- Covenant: Dutch model of public private collaboration between industrial associations and government
- Japanese model of environmental agreement between local government and industry
- Some initiatives by industry

1. Mode of Governance

(3) Public Private Partnership

- Triple Helix of university – industry – government relations = ″entrepreneurial university″: role of university research in the emerging regime of knowledge production and dissemination – boundary spanning mechanism (Leydesdorff and Etzkowitz 1996)
- Initiatives by university
- But the range of stakeholders involved is relatively limited – industry, university…

1. Mode of Governance

(4) Transdisciplinarity

- Transdisciplinarity goes beyond science in the sense that it "deals with relevant, complex societal problems and organizing processes..." that relate knowledge and values of "agents from the scientific and the non-scientific world" (Scholz et al., 2000)
- Characteristics of transdisciplinarity process (Scholz 2011)
  - joint agreement on the topic or specific system to be investigated
  - joint problem definition
  - collaborative, power-balanced relationship
- Broader range of stakeholders involved – government, scientists in various fields, industry, NGOs

2. Mode of Governance and Scoping of Issues at global level

2. Mode of Governance and Scoping of Issues at Global level

(1)Peak P Agenda

- Increasing concerns: Steep rise in P price and Peak P debate (Cordell (2009), Nature (2010), IFDC (2010)etc
- Initiatives taken by independent scientists and industry

nature International weekly journal of science

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NATURE | EDITORIA

Not quite a

Nature 467, 1005–1

Published online 27

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An upbeat assessm

Subject terms: Plant sciences · Institutions

Phosphorus in the form of phosphate has a crucial involvement in RNA, DNA and cellular

Global Environmental Change 19 (2009) 292–305

Contents lists available at

Global Environme

journal homepage: www.elsevie

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The story of phosphorus: Global food secur

Dana Cordell [a,b,*], Jan-Olof Drangert [a], Stuart White [b]

[a] Department of Water and Environmental Studies, Linköping University, SE-581 83 Linköping, S

[b] Institute for Sustainable Futures, University of Technology Sydney, PO Box 123, Broadway, NS

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ABSTRACT

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Press Releases

IFDC Report Indicates Adequate Phosphorus Resources Available to Meet Global Food Demands

Media/Information

- Media Contacts
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- Press Kit
- Press Releases
- Annual/Corporate Reports
- IFDC Report (Quarterly Newsletter)
- Calendar of Events
- IFDC in the News
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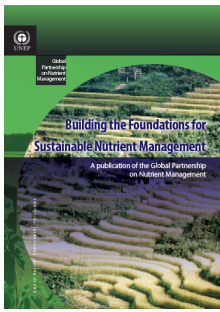
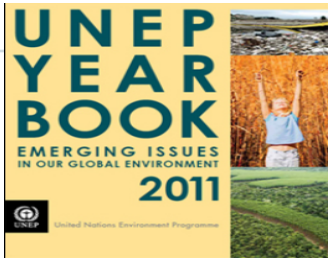
2. Mode of Governance and Scoping of Issues at Global level

(2) Global Partnership on Nutrient Management

- Organizer (secretariat/facilitator)
  - Steering committee, UNEP/GPA (Global Programme the Protection of the Marine Environment from Land-based Activities
  - intergovernmental initiative
- Participants/members
  - governments (US, the Netherland, Italy, EU, UNECE, etc), UN agencies (FAO , IOC UNESCO, UNDP etc) , scientists (International Nitrogen Initiative, IFDC etc), private sector/industry (IFA etc)
- Objective
  - provide platform for stakeholders and promote sustainable nutrient management for ecosystems' health, knowledge/policy generation to "reduce excess" use and improve "nutrient efficiency"



2. Mode of Governance and Scoping of Issues at Global level



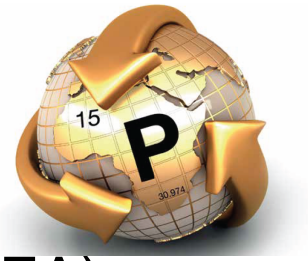
(2) Global Partnership on Nutrient Management

- Characteristic
  - "nutrient challenge"= adverse environmental impact, reduce excess, promote efficient use, nutrient= nitrogen and P
  - interest started from N management (environment/ marine) and expanded to include P by framing the issue "nutrient" management
    - Long history of effort to manage N
    - P was paid attention when UNEP Yearbook 2011 chose P as one of the 3 emerging issues (from the perspectives of food production, critical nutrient, environmental pressure, sustainable use of finite resource)
  - emphasis on environmental perspective: agriculture marine environment, biodiversity and climate change etc
  - Broader involvement of agriculture and food sector

2. Mode of Governance and Scoping of Issues at Global level

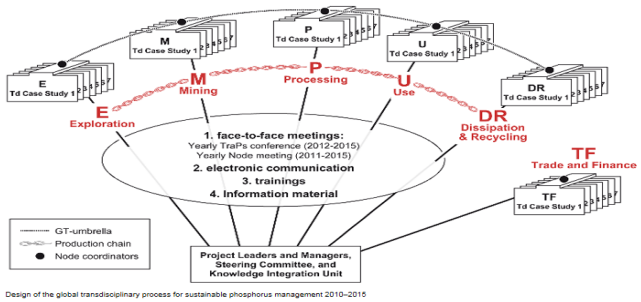
(3) Global TraPs

- Organizer : Leaders from Academia (Sholtz, Fraunhofer), and practice (Roy, IFDC) - joint initiative at non-governmental level
- Objective: create multi stakeholder forum
- Partners: University, Research Institute, Industry (IFA), public sector (USGS), UN organizations (UNEP, FAO etc), NGOs (Greenpeace), mining (OCP)




Global TraPs Workshop III, Zurich, August 29–30, 2011

2. Mode of Governance and Scoping of Issues at Global level



Design of the global transdisciplinary process for sustainable phosphorus management 2010–2015

(3) Global TraPs

- Characteristic
  - Inclusive, Comprehensive and Integrative,
  - transdisciplinary: mutual learning
  - Scope: lifecycle perspective (phosphorus supply/ demand chain), human-environment system- based,
    - Exploration→Mining→Processing →Use →Dissipation/Recycling →Finance/Trade/Transport
    - alternatives in use, reuse and recycling.
  - Some limitation of user side participation?

(from fisherman benefiting from mild eutrophication, industrial companies using chemical products)

3. Mode of Governance and Scoping of Issues at Domestic Level (the case of Japan)

3. Mode of Governance and Scoping of Issues at Domestic Level

(1) Background

- Regulation of wastewater/sewage
  - Environmental standard (ambient and emission standards for lake and sea) has long been in place.
  - Revision of Sewage law in 1996: included "effort to recycle sewage sludge" - however most of the recycling directed to cement use
- Japan has zero P mining = 100% dependent on import of every types of P main exporters are China, Jordan and Morocco
- Increasing awareness of the need to secure P supply triggered by price rise in P/fertilizer (from 2008 to 2009)

(2) Phosphorus Recycling Promotion Council Japan (2008)

- Initiative came from Prof. Ohtake, and Fertilizer and Ammonia Producers Association cf. Secretariat: Japan Organics Recycling Association
- Focusing on recycling (technology) especially from sewage
- Less involvement of agriculture/ farmers and traders

3. Mode of Governance and Scoping of Issues at Domestic Level

- the study of P flow in Japan (2005) by Matsubae et al (2011) shows that we potentially have enough P

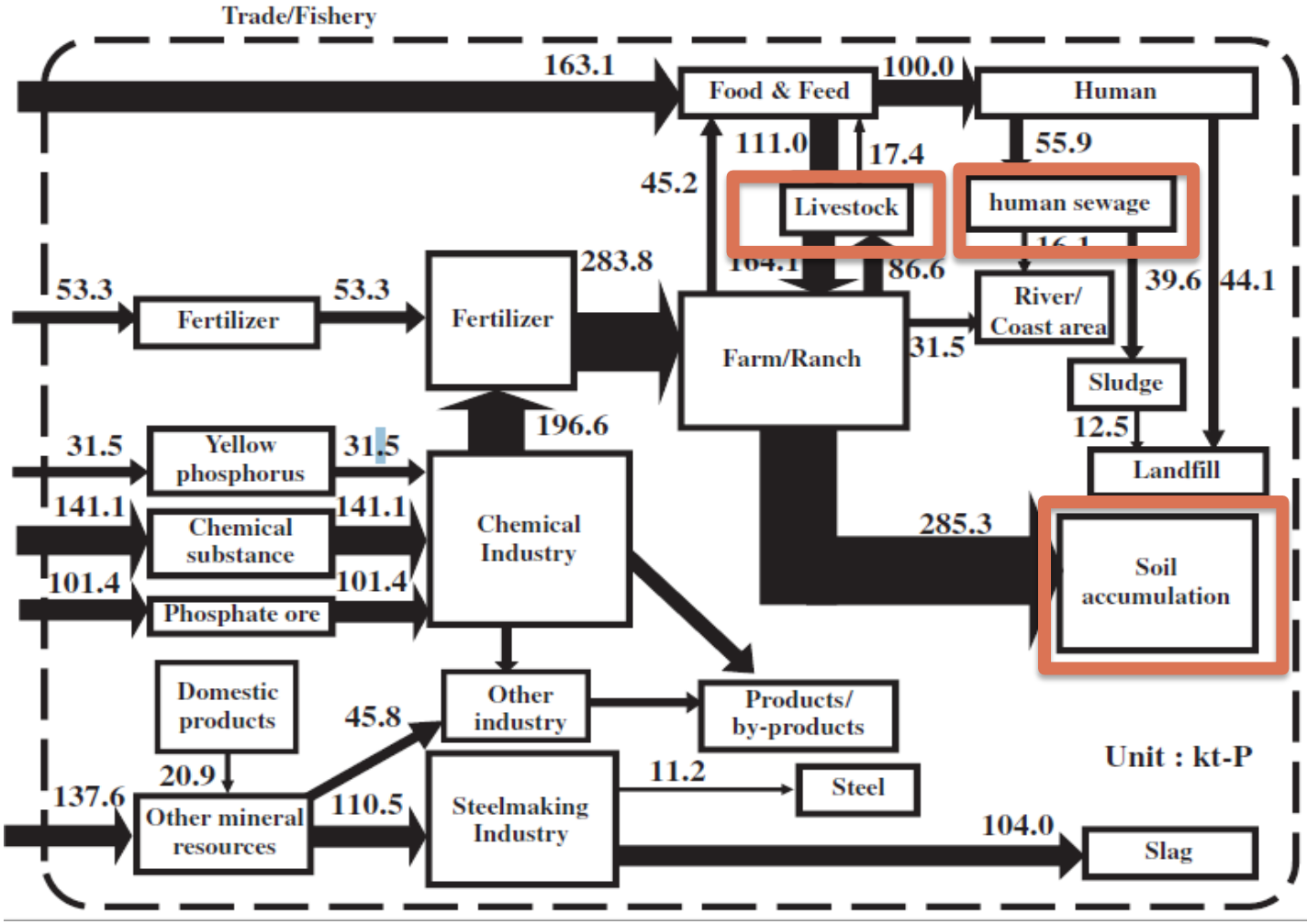
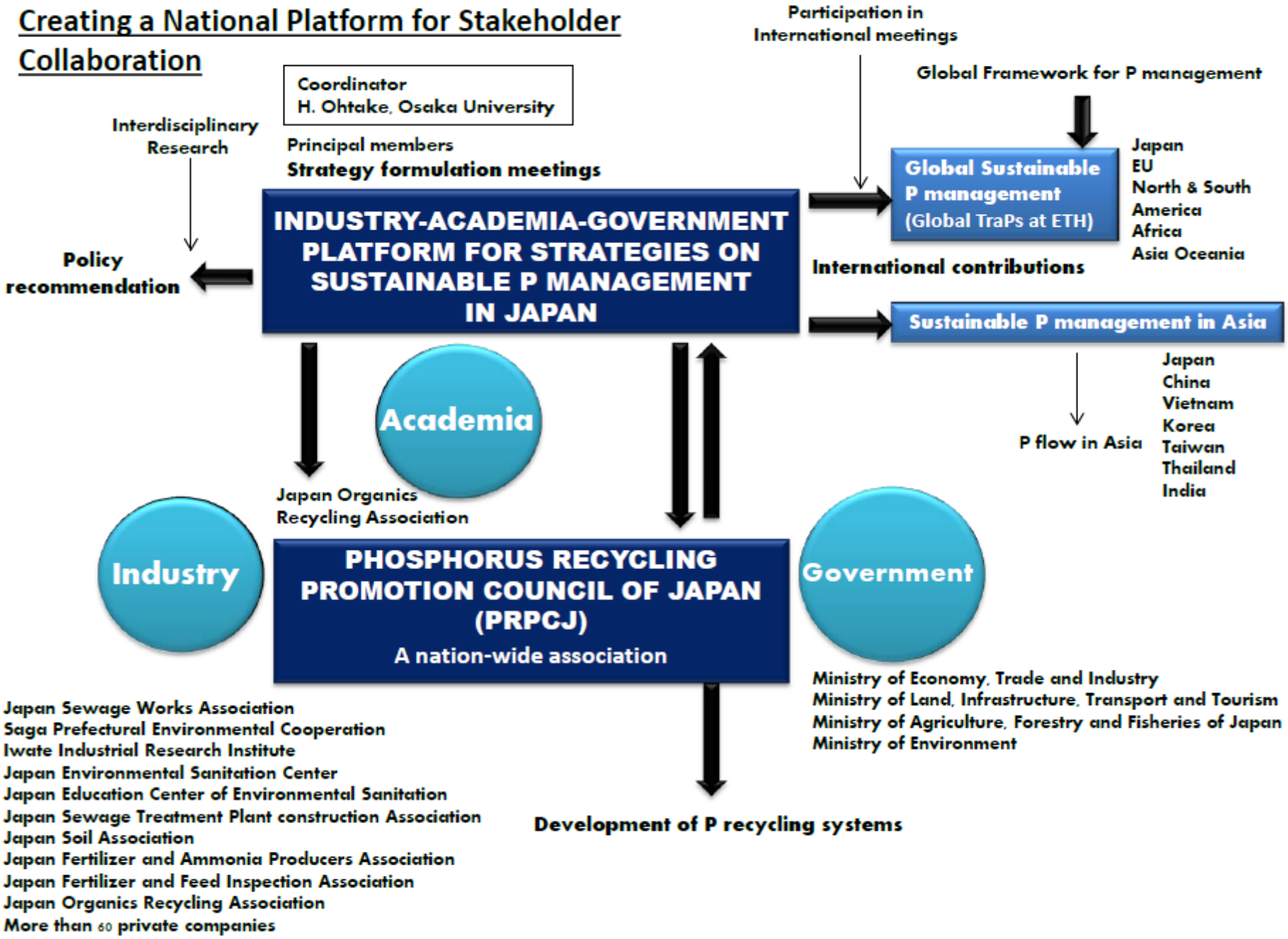
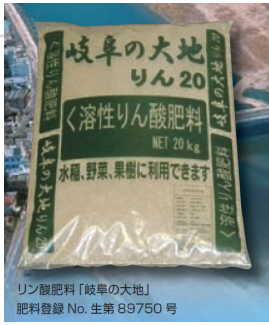


figure from Matsubae et al (2011) Chemosphere 84, pp767-772

Creating a National Platform for Stakeholder Collaboration



3. Mode of Governance and Scoping of Issues at Domestic Level



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肥料登録 No. 生第 89750 号

Cases of Recycling from Sewage

- Underlying idea
  - Efficient use of potential resources: the amount of P import corresponds to the amount of waster water sewage and iron/steel sludge (Matsubae et al 2008)
  - Recovered P has less heavy metal and thus considered to be environmentally friendly
- Emerging cases of P recycling at local level
  - Phosphorus Recovery from Sewage Sludge: Incinerator Ash (Gifu and Tottori city), MAP (Fukuoka, Shimane, Osaka city)
  - with the help of MLIT national project (LOTUS project etc)
- Main actors
  - Sewage department of municipalities
  - engineers, MLIT, fertilizer companies


リン回収施設全景

3. Mode of Governance and Scoping of Issues at Domestic Level

Decoupled from use less/efficient use of P in agriculture perspective

- Current situation and Underlying idea
  - Japanese land soil in general is scarce of P
  - however, after the WWII, with the encouragement in agricultural policy and JA, huge amount of P was brought into the land, but uneven distribution...
    - excessive input for high value products (vegetables and fruits) but less input for rice cultivation there is a potential for excessive accumulation in soil for the former lands
  - Thus there is a need for soil diagnosis to understand the proper amount of P need in each land.
- Challenges
  - Farmers disinterest in soil diagnosis. How to get each farmers engaged?
  - Farmers fear for less yield with less input of P
- Main actors: agricultural farmers, agricultural scientists

4. Concluding Remarks

Nature of This Global Conference

- Complementality of GPNM and GTraPs

- GPNM: Initiative by International Organization
  : Using independent scientific assessment
  : Focusing on Nutrient Efficiency – food security, environment
  : Broader involvement of food sector
- GTraPs: Non-governmental Joint Initiative
  : Using Transdisciplinary Process
  : Focusing on lifecycle (phosphorus supply/demand chain) - supply security, environment, efficiency, social aspect
  : Broader involvement of mining sector

Dilemmas for Managing Transdisciplinary Process

- Broader involvement or targeted / limited involvement of stakeholders

- Possibilities and limits of consensus (同床異夢"Doshoimu"= sharing bed and having different dreams=win/win = supporting same position based on different interests)

Future Steps

- Analytical inputs into international treaty making process
- Parallel implementation through transnational transdisciplinary process
- Parallel process at regional level

  cf. Millennium Ecosystem Assessment