IPBES and Biodiversity Policy:
From the Perspective of Multi-level Governance

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I.   Research objectives and questions

Biodiversity as a key environmental policy issue has been a significant topic of debate among scholars and practitioners alike. Prompted by the establishment of IPBES (Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services) in 2012 by more than 100 governments, it has attracted increasing attention in literature. With its approach assessing future biodiversity scenario mobilizing key natural scientists, the platform is often referred to as the "IPCC (Intergovernmental Panel on Climate Change) in biodiversity." The recent documents addressing this question regard subnational governments and governance factors as key (e.g. Velten et al.; 2018; Baynham-Herd et al. 2018; Barletti et al. 2018). Elsewhere, Carmen et al. (2018) highlight the combination of bottom up and top down approaches as a significant driver most likely to provide effective arguments for biodiversity. Elsewhere, if we turn to a specific country context, what appears is a body of literature demonstrating the usefulness of dynamic interdependency models in the analysis of Japan's local governments

and policy-making (e.g. Itō 2002). This paper draws on this set of previous literature and undertakes a quantitative research project addressing the impact of multi-level governance (MLG) on biodiversity policy-making and implementation in Japan's municipalities, referring to the influence of IPBES. In so doing, the paper reveals the significance of the combination of bottom-up and top-down approaches and resulting effective MLG within Japan's key policy sector.

The research questions are as follows: First, does IPBES connect each level of governmental activity and are global IPBES activities and Japan's national and local activities well related? Second, is IPBES same as IPCC? If it isn't, how are they different? Third, is participation or good governance more effective for biodiversity conservation and does more participation equal more biodiversity?

The exploration will proceed as follows: First, we will define MLG and classify three types of MLG. Second, we will examine the functions, work programs, and organizations of IPBES. Third, we will apply the typology to IPBES and biodiversity conservation policy. Finally, we will answer our three research questions by analysing our questionnaire survey about IPBES and local biodiversity policy implementation to local government officials. Overall, we will conclude that the ideas of global IPBES biodiversity assessments could not penetrate to stakeholders at a local level, particularly in the area of local interest. As the public sense of crisis in biodiversity policy in IPBES is weaker than that of the climate change policy in IPCC, soft programs for education are important at this stage. Bottom-up policy making or public (stakeholder) participation is more important for general wide program performance than for only environmental conservation program performance.

II.   The Definition of multi-level governance (MLG)

Figure 1 shows the analytical conceptual framework of IPBES. The goal is good quality of human life, which is at the top, and the important factor for human wellbeing is nature or biodiversity and ecosystems, which is at the bottom. Nature benefits people through various ecosystem goods and services, such as water and food provision, regulation of mudslides and floods by forests

Figure 1. IPBES analytical conceptual framework
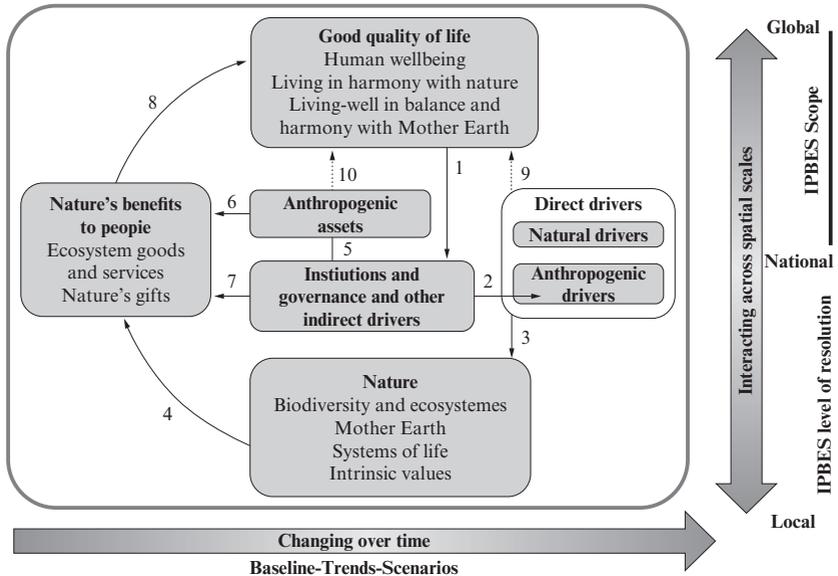
(Source) Diaz et al. (2015, 5). The numbers are remained as original.

and other landscapes, and green tourism; these are nature's gifts to us.[1] As such, it is important for us to conserve our natural environment through direct natural and anthropogenic drivers. Institutions and governance are indirect drivers, which impact nature through direct drivers. The IPBES framework has the characteristics of a social-ecological system (SES) from long-term and large space scales, global, national and local (Oyama 2017: 2).[2]

A key concept explaining the nature of IPBES is MLG. This concept has been employed in a variety of contexts in response to a broad spread of the concerns (Marsh & Furlong 2002, 32). After Garry Marks (1993, 392; introduced by

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1) Recently, Diaz et al (2018) proposed "Nature's Contributions to People" (NCP) in place of nature's benefits or gifts to people for "recognizing culture, and diverse sources of knowledge, can improve assessments".

2) SES literature uses governance as governance system(s) mostly. Governance system represents social system, and resource system represents ecological system (Oyama, 2017: 6).

Bache & Flinders, 2015, Vol.1, p. xv) sets it out as "a system of continuous negotiation among nested governments at several territorial tiers—supranational, national, regional and local—as the result of a broad process of institutional creation and decisional reallocation that has pulled some previously centralized functions of the state up to the supranational level and some down to the local/regional level" prompted by the reform of the Structural Funds in 1988 and the emergence of European Union and the single market, the concept has seen significant development, with extended definition and usage (Stephenson, 2013 ; see Table 1). For example, Hunt (1999) broadens its scope by defining it as the policy processes involving: "the interaction between a constellation of public and private actors located at the supranational, national and sub-national level." (Hunt, 1999 in Marsh & Furlong, 2002, 36). Indeed, the scope of MLG has covered a variety of issues (Stephenson, 2013), and literature started employing the concept to analyze the examples beyond Europe (e.g. Rabe, 2007 on North America; Inoue & Shivakoti, 2015 on Asia; Daniell & Kay, 2017 on Australia). In this set of growing dissemination, the field of environmental policy can be highlighted as a key area where MLG has extensively been embraced as a key framework (e.g. Fairbrass and Jordan 2004; Knill & Tosun 2008; see also Bache & Flinders, 2015, Vol. 2, 317–492). To examine this sector where the involvement of private sector actors has been crucial (UN Environment 2019), the following definition by Ueta (2008, 33) is worth referring to: "the governance where the structure of environmental problems, policy, and institution at each level, local, regional, national, and global is interacting or interdepending." This definition offers benefits of explicitly covering horizontal societal networks, heeding interdependencies at each level. This paper further develops Ueta's (2008) approach by setting out the following definition of MLG, referring to Benz (2006, 95, translated by Newig) and Newig and Fritsch (2009, 199):

Political structures and processes that transgress the borders of administrative jurisdictions, aiming to cope with interdependencies in societal development and political decision-making which exist among territorial units.

Table 1. The growing usage of MLG in literature

Usage	Issues
Original uses (1993−)	- Legal jurisdiction of authority and efficiency - Europeanization and regionalization
Functional uses (1997−)	- Policy/country studies and implementation studies - Problem-solving, co-ordination, learning
Combined uses (2001−)	- New modes of governance - New institutionalism / principal-agent theory
Normative uses (2003−)	- Legitimacy, democracy, accountability - Identity politics (community, collective identities, political parties, public sphere)
Comparative uses (2007−)	- Global governance and international institutions - EU & regionalism - Administrative processes, tasks and interactions

(Source) Figure 1 in Stephenson (2013, 832) is revised. Author appreciate Masahiro Mogaki for his suggestion.

This definition enables MLG to include vertical governmental and horizontal societal relations, but focuses on political institutions or systems connecting each level through a nested structure or adaptive (co)management (Oyama, 2017, 12, 23). Drawing on the above, the following section further elaborates MLG within this paper through formulating its typology.[3]

III. Typology of MLG

Table 2 shows that there are three types of MLG: governmental relations, temporary organization, and mandated participation planning (MPP). Type 1 seems to be top-down and with federal governmental relations or elitism; the characteristics of this type are general purpose, non-intersecting and nested membership, limited levels, very low flexibility by system-wide architecture, non-

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3) Adaptive (co)management is often used in ecology. It is contrary to scientific management, which is believed to be one of the best types of management and was powerful in early 20th century US public administration. Adaptive management is similar to the human relations school of thought, which considers more social and psychological factors, criticizing scientific management through the Hawthorne Experiment.

Table 2. Typology of MLG

	governmental relations (type1)	temporary organization (type2)	mandated participatory planning (type3)
Purpose	General purpose	Task specific	Task specific
Membership	Non-intersectig, nested	Intersecting	Typically non-intersecting, nested
Number of levels	Limited	Unlimited	Not strictly limited, but key levels are emphasized
Flexibility	Very Low (sytem-wide architecture)	Flexible design	Sytem-wide architecture with certain flexibility
Competitiveness	Non-competitive	Competitive	Non-competitive
Initiation	Preexisting	Typically 'bottom-up'	'Top-down'

(Source) Newig & Koontz (2014, 255) was partly revised by author.

competitive, and pre-existing initiation. A typical example is the EU's Structural Fund.

Although an effective supra-national power connected with each nation's local government by a Structural Fund consisting mainly of agricultural subsidy beyond each national government, it has proven problematic from the perspectives of accountability and democracy in the nation state system.

In contrast, type 2 temporary organization is bottom-up and is similar to pluralism. The characteristics of this type are task specific purpose, intersecting membership, unlimited levels, flexible design, competitive, and bottom-up initiation. Newig and Koontz (2014, 254) explain type 2 as the temporary institution named as 'Functional, Overlapping and Competing Jurisdictions' (FOCJ) by renowned economists Bruno Frey and Eichenberger (1996). Types 1 and 2 contrast with one another, with characteristics of top-down vs. bottom-up, government vs. civil society, and elitism vs. pluralism, but both seem to be ideal types.

Newig and Koonz (2014, 255) introduced type 3 of MLG named the mandated participatory planning (MPP) by the EU. The characteristics of this type are task specific purpose, similar to type 2, but typically non-intersecting

and with nested membership, both of which are similar to type 1. Type 3 has system-wide architecture like type 1 but has certain flexibilities that make it similar to type 2. However, type 3 is non-competitive and of top-down initiation, which is similar to type 1; in this way, it seems similar to sectoral corporatism. Type 3 is a compromise between types 1 and 2, but it also includes civic participation in planning that is not voluntary (bottom-up) but mandatory (top-down). Typical examples of this are the Water Framework Directive (WFD), the Floods Directive (FD), and the Air Quality Directives (AQD) introduced by Newig and Koonz (2014).

Following this, we shall apply these types to IPBES.

IV.　IPBES?

Before applying the typology to IPBES, we will generally examine the functions, objectives, and organizations of IPBES. Since it was founded in April 2012, IPBES has published several scientific assessment reports for improving policy-making in biodiversity and ecosystem services.[4] The IPBES websites can be found through the following link: (https://www.ipbes.net/). Figures 2 through 4 are based on information from the sites.

Figure 2 shows four functions of IPBES: assessments, knowledge generation catalysis, policy support, and capacity building. In IPBES, many natural scientists participate in scientific assessments of the future state of biodiversity and ecosystem services with member states' officials. They generate scientific knowledge and influence their community. Their arguments need expertise, so capacity building is important for IPBES, especially for developing countries. Scientific assessments sometimes include policy support tools and methodologies for managing biodiversity and ecosystem services. However, whether policy makers or stakeholders in each state decide on a biodiversity policy involving assessment reports depends on their values, ideas, and political processes.

Figure 3 shows the work program structure from 2014 to 2018. It is similar

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4）　For the history of IPBES and the Convention of Biological Diversity, See Kosaka (2012).
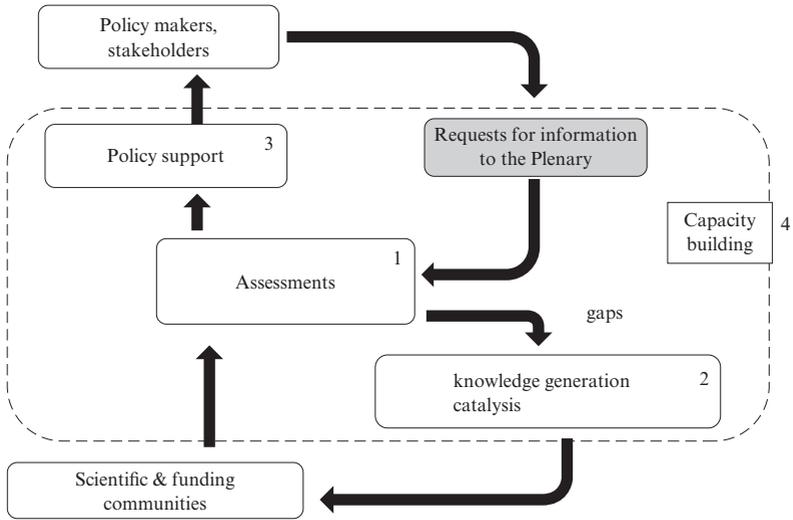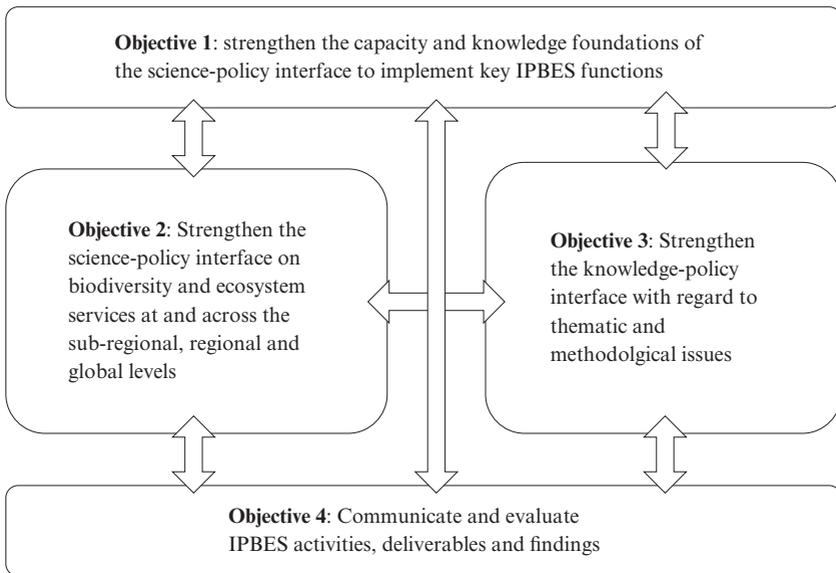
Figure 2. Four functions of IPBES

Policy makers, stakeholders	
Policy support 3	Requests for information to the Plenary
Assessments 1	Capacity building 4
	gaps
	knowledge generation catalysis 2
Scientific & funding communities	

Figure 3. Structure of the work program

Objective 1: strengthen the capacity and knowledge foundations of the science-policy interface to implement key IPBES functions

Objective 2: Strengthen the science-policy interface on biodiversity and ecosystem services at and across the sub-regional, regional and global levels

Objective 3: Strengthen the knowledge-policy interface with regard to thematic and methodolgical issues

Objective 4: Communicate and evaluate IPBES activities, deliverables and findings

to the previous four functions of IPBES. There are four objectives which are parallel to four functions: to strengthen the capacity and knowledge foundations; to strengthen the science-policy interface across local, national, and global levels; to strengthen the knowledge-policy interface in thematic and methodological issues; and to communicate and evaluate IPBES activities.

Figure 4 shows how IPBES is structured. Each organization is explained on the IPBES website.[5] Plenary consisting of each state representative decides each assessment which experts prepare in multidisciplinary expert panel (MEP) and/ or Expert Groups & Taskforces. Bureau is a substantial deciding body consisting of executive members. Secretariat supports each organization using Technical Support Units (TSU). Then IPBES can be seen as a coalition between each government and experts. The problem from multi-level governance is that whether the coalition of each government and experts penetrate to national and/ or local government and stakeholders such as fishermen or farmers. International environmental NGOs participate in IPBES meetings, but national and/or local stakeholders seldom participate in the meetings.

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5) "Plenary: The governing body of IPBES – consists of the representatives of IPBES member States – typically meets once per year. Stakeholders: All contributors to and end-users of the IPBES outputs. Observers: Any State that is not yet a member of IPBES, the Convention on Biological Diversity (CBD) or other biodiversity-related conventions, related UN bodies, or any other relevant organization or agency." "Bureau: Comprising the IPBES Chair, Sir Robert Watson (Ana Maria Hernandez Salgar has been appointed as the new Chair of IP-BES in the seventh Plenary in Paris, France in 2019 (https://www.ipbes.net/news/new-ipbes-chair-announced, 190723 accessed), four Vice-Chairs, and five additional officers who oversee the administrative functions of IPBES. Multidisciplinary Expert Panel (MEP): Five expert participants from each of the five UN regions, overseeing all IPBES scientific and technical functions."

"Expert Groups & Taskforces: Selected scientists and knowledge holders carrying out the IPBES assessments and other deliverables. Secretariat (Includes Technical Support Units): Ensures the efficient functioning of IPBES through support to the Plenary, Bureau and MEP, as well as implementing the Platform's work and administrative functions, led by the Executive Secretary of IPBES, Dr. Anne Larigauderie. The headquarters of the secretariat is in Bonn, hosted by the Federal Government of Germany."

Figure 4. How is IPBES structured?
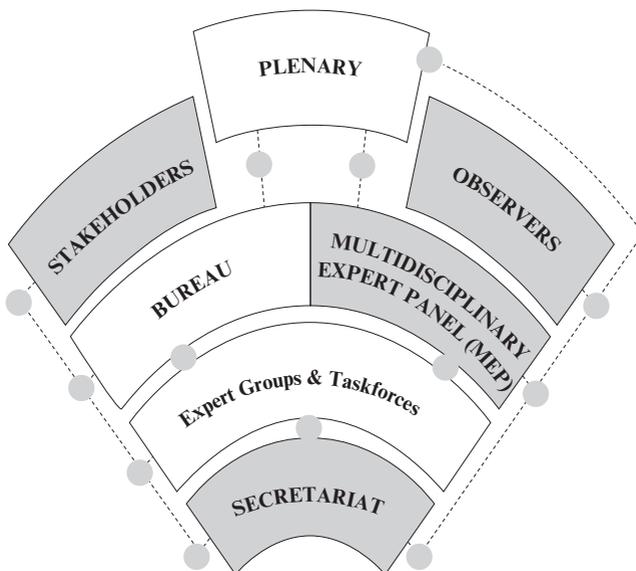
V. Typology application to IPBES & biodiversity conservation policy

IPBES assessed global and regional biodiversity future scenarios made by experts, and each assessment is expected to connect to each national or local biodiversity program. How do the global and regional scenarios made by IPBES connect to national and local biodiversity conservation policies? In other words, how does the coalition of governments and experts in IPBES involve each national or local stakeholder in implementing global and regional scenarios? This is the problem with MLG in natural capital or ecosystem services.

Figure 5 attempts to show the MLG of natural capital, though it has room for improvement. Considering previous MLG definitions, we will define MLG in natural capital as the political coordination system or institution where the interdependent situation of natural capital goes beyond each administrative jurisdiction. The coalitions of each government and environmental experts act across each level, taking the actual situation of the local site and trying to

Figure 5. Multi-level Governance of Natural Capital
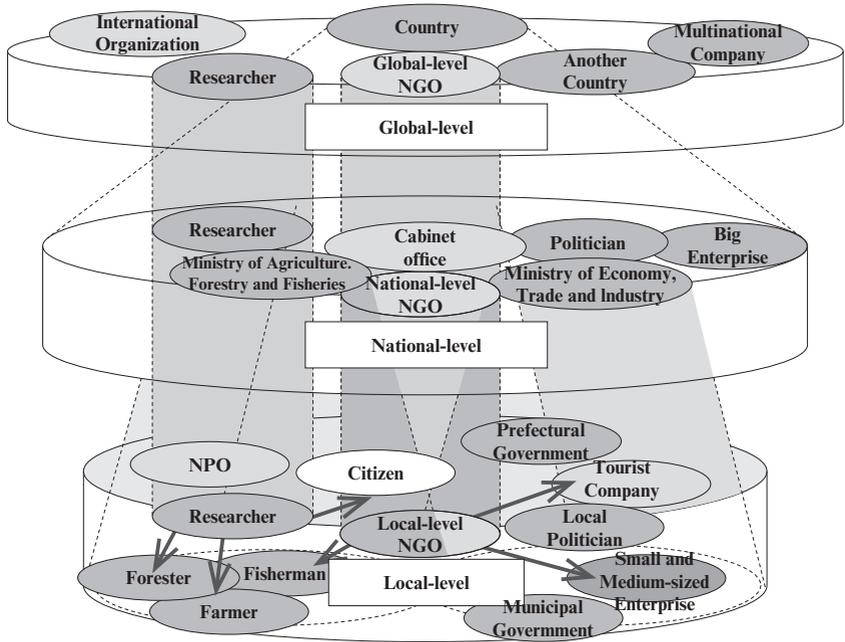
(Source) Made by 4(2) team, especially Yuki Oda, in PANCES (S15) project.

penetrate the biodiversity policy based on scientific assessment such as Global Biodiversity Outlook, GBO.

The coalitions between experts and governments have a nested structure at each level, global, national and local. With its Secretariat within the UN Environmental Program (UNEP), the IPBES can be characterized as problem-oriented, with its experts engaging in multiple responsibilities and stakeholders covering key private sector actors such as international environmental NGO. This suggests that the Platform can be strongly associated with type 3. Environmental NGOs are participating in IPBES, but local producers such as fishermen and farmers are typically not participating in the implementation of biodiversity conservation policy. As such, each national and local government seeks incentives and contribution, in other words, carrots and sticks for

involving local producers in policy implementation. The coalitions want to get consent from stakeholders, respecting Indigenous Local Knowledge, ILK, and to implement local programs based on assessments. For example, coalitions have a problem when attempting to get consent from fishermen and farmers to implement no-fishing zones based on IPBES assessments. Additionally, IPBES does not have any coercion over each local government to force participating stakeholders to implement biodiversity policies. IPBES is in type 3 MLG but is different from the EU in this area of mandatory coercion for civic participation.

IPBES is weak in coercion to regulate each state and local governments, then we could call it an international organization, but it is not easy to call it an international regime[6] which includes the negotiation of both informal and formal norms and rules to govern particular issue area (Mark f. Imber, 2007, 479). Its budget is not so huge.

VI.　Does IPBES connect governmental relations?

We shall consider whether IPBES connects governmental relations. At global level, the Convention on Biological Diversity (CBD) was adopted in 1992 and came into effect in 1993. At national level, the Japanese government set the National Biodiversity Strategy and Action Plan (NBSAP) in Cabinet in 1997, which has since been revised in 2004, 2007, 2010, and 2012. The Government enacted the Basic Act on Biodiversity on June 6, 2008 and after this, NBSAP has been based on the law. Meanwhile, Japan's prefectural and municipal governments have been setting Local Biodiversity Strategy and Action Plans (LBSAPs) at the local level. But the setting rates are not high in all local governments; in total, only 110 (5.9%) in 1,864 local governments have set LBSAPs. However, these figures depend upon population size in the local government: 39 prefectures (83%) in 47 all, 15 ordinance designated (big) cities (75%) in 20 all big cities, and 56 municipalities (3.1%) in 1,817 all (as of December 31, 2016).

Setting rates show that the CBD and IPBES could connect national,

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6) Author appreciate Prof. Guy Peters who pointed this problem in ICPP4 meeting.

Table 3. The Comparison between IPBES and IPCC

Characteristics and/or implications for science-policy interface	Climate change (physical science basis and mitigation)	Climate change (adaptation)	Biodiversity and ecosystem services
Science-policy interface	IPCC (http://www.ipcc.ch)		IPBES (http://www.ipbes.net)
Global policy framework	UNFCCC (http://www.unfccc.int)		CBD (http://www.cbd.int)
Scale of the issue	Global	Multi-scalar	Multi-scalar
	Global assessment is essential	Assessment should be subglobal as well as global	Assessment should be subglobal as well as global
Extent of knowledge gaps	Moderate	Large	Fundamental
	Knowledge generation is less of a focus	Support to knowledge generation is a priority	Support to knowledge generation is a priority
Alignment of existing response	Good	Poor	Poor
capacity	Capacity-buidilng is less of a focus	Capacity-building is a priority for developing countries	Capacity-building is a priority for developing countries
Intergovernmental policy	No agreed targets	No agreed targets	Agreed targets
environment	Less scope for delivering policy support	Less scope for delivering policy support	Support to delivery of existing policy targets is a priority

(Source) Brooks, et al. (2014, 544).

prefectural and big city governments, but have not yet been able to connect medium and small municipalities. Small cities, especially rural municipalities, do not have sufficient staff nor budget and need support from experts (Oda and Oyama, 2019). As previously mentioned, one of the most important objectives of IPBES is to strengthen knowledge generation and capacity building. This is important for small rural municipalities at local level as well as for developing countries at global level.

Table 4. Chronological difference for IPBES and IPCC

	The development of UN Convention on Biological Diversity (CBD), IPBES, and domestic respenses		
year	UNCBD	IPBES	Japan's domestic responses
1988	Three main goals of UNCBD: the conservation of biodiversity; the sustainable use of its components; and the fair and equitable sharing of benefits arising from genetic resources (ABS).		
1989			
1990			
1991			
1992	UNCBD was opened up for signature.		
1993	**UNCBD entered into force**		**Japan concluded UNCBD**
1994			
1995			The National Biodiversity Strategy & Action plan (NBSAP) was decided in Cabinet.
1996			
1997			
1998			
1999			
2000	The Cartagena Protocol on Biosafety was adopted. (Regulation of new biotechnology)		
2001	Global Biodiversity Outlook (GBO)1	**Millennium Ecosystem Assessment (MA)**	**Establishment of the Ministry of Environment**
2002			**New NBSAP/** Enactment of the Promotion of Nature Restoration Act/Amendment of the National Parks Law
2003	The Cartagena Protocol on Biosafety was enforced.		Enactment of the Act on the Conservation and Sustainable Use of Biologlcal Diversity through Regulations on the Use of Living Modified Organisms/ Amendment of the National Parks Law
2004			
2005		International Mechanism of Scientific Expertise on Biodiversity (IMoSEB)	
2006	**GBO2/2010 Targets**		
2007		**Economics of Ecosystem and Biodiversity (TEEB)**	**the 3rd NBSAP/the MOAFF BSAP**
2008		UNEP multi-stakeholder meeting	**Enactment of the Biodiversity Basic Law (legal basis of NBSAP)**
2009			
2010	**GBO3/Aichi Targets/Nagoya Protocol (Japan did not ratify it.)**	(WAVES)	**2010NBSAP/the Act on Biodiversity Regional Partnership Promotion/Japan Biodiversity Outlook (JBO) 1**
2011		UNEP Intergovernmental Meeting	Marine Biodiversity Conservation Strategy of Japan/ Environmental conservation type agriculture direct support measures
2012		**IPBES establishment**	
2013			
2014	**GBO4/Nagoya Protocol entered into force.**	**IPBES first phase work plan**	Enactment of Promoting the multidimensional function of Agriculture
2015			
2016			**JBO2**

(Source) Revising a little of the material from Professor Shizuka Hashimoto.

	The Development of UN Framework Convention on Climate Change (FCCC) & Intergovernmental Panel on Climate Change (IPCC) and Domestic Resposes		
year	UNFCCC	IPCC	Japan's domestic responses
1988		**Establishment of IPCC**	
1989			
1990		**IPCC the 1st Assessment** ⟶	**Global warming prevention action plan (Ministerial Cabinet decision)**
1991			
1992	**Adoption of UNFCCC** ⟶		
1993			⟶**Japan concluded UNFCCC. The revised Rationalization in Energy Use Law.**
1994	**UNFCCC coming into effet** ⟵		
1995		IPCC the 2nd Assessment	
1996			
1997		**Adoption of Kyoto Protocol**	⟶**Installation of Global Warming Prevention Headquarters (Cabinet decision) Guideline for Measures to Prevent Global Warming (Headquarters decision)**
1998			**Law Concerning the Promotion of the Measures to cope with Global Warming The revised Energy Saving Law**
1999			**the Basic Policy on Global Waming Prevention (Cabinet decision)**
2000			
2001		**IPCC the 3rd Assessment**	
2002			⟶**Ratification of the Kyoto Protocol** **The revised Law concerning the Promotion of the Measures to Cope with Global Warming (Kyoto Protocol Goal Attainment Plan, Local Action Plan)**
2003			
2004			
2005		**Kyoto Protocol coming into effect**	**The revised Law concerning the Promotion of the Measures to Cope with Global Warming (Calculation, Report and Publication of Greenhouse Gas)** **Changing Guideline to Kyouto Goal Attainment Plan** **The revised Enegy Saving Law, The revised Law concerning the Promotion of the Measues to Cope with Global Warming**
2006			Biomass Nippon General Strategy
2007		IPCC the 4th Assessment ⟶	The MOAFF Global Warming Prevention General Strategy
2008		**The 1st commitment period prescribed by the Kyoto Protocol started**	**The revided Kyoto Protocol Goal Attainment Plan, The revided Energy Saving Law** **The revided MOAFF Global Warming Prevention General Strategy** **Agriculture, Forestry and Fisheries Biofuel Law**
2009			**Biomass utilization promotion fundamental law**
2010			
2011			**Environmental conservation type agriculture direct support measures**
2012			**The Act on Promotion low carbon in urban area**

(Source) Revising a little of the material from Professor Shizuka Hashimoto.

Next we shall compare IPBES and IPCC. Table 3 shows that IPCC and IPBES are generally similar because IPBES was originally designed as a model to imitate IPCC. However, as mentioned previously, IPBES has problems of knowledge generation and capacity building. Table 4 compares the development of CBD, IPBES and related domestic responses and the Framework Convention on Climate Change (FCCC), and IPCC and domestic responses. The problem with this is that IPBES cannot become mainstream. IPCC is more popular than IPBES because people have more of a sense of crisis in climate change and global warming, and the target of reducing CO_2 is relatively simple. In contrast, biodiversity is more difficult for the general public to understand, because targets are plural and more complex than reducing CO_2 in each local government, for example setting a no fishing zone or resource preservation area. Thus, education programs and activities are more important at this stage.

VII.　Is MLG effective for the conservation of biodiversity?

Newig et al (2009) meta-analysed 47 case studies in North America and Western Europe. They adopted a case survey method in which multiple evaluators evaluated each case; therefore, their study seems subjective rather than objective. However, they found some important hypotheses; for example, the environmental preference of stakeholders deciding environmental outputs and outcomes. This hypothesis indicates that if stakeholders have the same idea, value, or direction for the environment, the output and outcomes for the environment increases beyond their interests. Though this situation is hard to explain, Newig et al (2009) found many cases of interactive but also face-to-face communication having positive effects at biological level.

Their study results were as follows: the influence of actors is not related to the scale of the problem or governance. The scales of problem or (authoritative or participatory) governance are not related in their outcomes. At 5%, the results suggesting that the higher the participation the more ineffective the outcomes are statistically significant. Environmental output is higher in polycentric governance than in single governance, but environmental outcome is related to neither. This means that the problem is a so-called collective action problem or a

social dilemma problem. The conflict is between the expert-government coalition vs. the local stakeholder (or producer) interest for farmers or fishermen, in other words, long-term global common ideas and interest vs. short-term local interest.

VIII.   Questionnaire survey results to local officials

In contrast to the case survey method by Newig et al (2009), we have carried out a questionnaire survey regarding the consciousness of Japan's municipalities' officials earlier this year. We also conducted multiple regression analysis of their subjective performance as a dependent variable, and of some independent variables such as the having some plan or guideline of conserving natural environment, the monitoring natural environmental situations, scientific or adaptive management methods, the perception of IPBES as MLG and the size of population in municipality. Perfect analysis has not yet been completed, but we are able to share interim analytical results. The survey was distributed by mail and the web to all 1,741 municipalities in Japan from January to February in 2019. The response rate was 64.9% (1,130 cases, as of April 15) overall, 741 by mail and 389 by web survey. This interim report is based on both surveys. We used 769 cases after cleaning outliers.

The following are the questions asked. Q11 and Q12 are dependent variables, and Q13 through Q17s3 are independent variables. Q11 and Q12 are both about subjective performance evaluations but are different in perspective: one from an environmental protection perspective (Q11) and the other from a more general wider perspective (Q12). Q11 and Q12 are ordinal valuables in a 5-point scale, with 5 being the highest performance and 1 being the lowest.[7]

There are six independent variables. In the following we will introduce them and our hypotheses. Q8 is whether the municipality has some plan or guideline of conserving natural environment. Be careful of that this plan is not limited to a narrow biodiversity conservation plan, but considered as a general wider

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7） We might should use logit analysis or path analysis, but actually used multiple regression analysis, treating ordinal variables as serial ones.

environmental plan. If the municipality has some natural environmental plan, it could get more budget for the plan, so it could implement programs more effectively. Q8 is a dummy variable. Q13 is the measurement or monitoring of natural environmental conditions. If a municipality measures or monitors natural environmental conditions regularly, then it will achieve high performance in program implementation. Q13 is also a dummy variable. Q14 through Q16 are about management methods, scientific management (A) or adaptive management (B). These are ordinal variables on a 5-point scale; 1 is the nearest to (A) and 5 is the nearest to (B). Q14 is about the flexibility of program management: (A) is rigid or no longer changes, but (B) is more flexible to situational change. If the program management is more flexible, the program performance is supposed to increase. Q15 is about the simplicity of program purpose, (A) is simpler, indicating only natural environmental conservation, and (B) is more complex and includes other purposes. If the program purpose is simpler, the program performance is supposed to increase. Q16 is about the decision-making system, top-down or expert oriented (A), or bottom-up, stakeholder or civic participation (B). Inference is difficult here, because both are important for biodiversity program performance, expert assessment and civic participation. We deduce that the decision-making system is unrelated to program performance. Q17s3 is about MLG. If the local official knows IPBES, meaning that (s)he understands the mechanism of biodiversity programs better and can implement them better, then the program performance increases.[8] V5 is a control variable and is the population size of each local government.[9] We assume that if the local government has more residents, it could have more budget, more expertise and more officials, then it would perform better.

The analytical results are shown in the following Table 5 through Table 7.[10]

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8) There are 3 answers; 0: I have not heard of IPBES. 1: I have heard of it. 2: I understand the contents of it.

9) We coded that 1: $1 \leq$, 2: $500 \leq$, 3: $5,000 \leq$, 4: $50,000 \leq$, 5: $500,000 \leq$. This is based on the way of logarithm, but other coding may be better as we will consider later.

10) We divided all samples to two samples, environmental conservation samples and wild animal damage prevention and alien species management samples. However, the analytical results were almost same. See note 11.

Table 5. Descriptive Statistics

	n	Minimum	Maximum	Average	S.D.
Q11	775	1	5	3.6	0.679
Q12	773	1	5	3.59	0.634
Q8	770	0	1	0.61	0.488
Q13	772	0	1	0.36	0.48
Q14	775	1	5	3.48	1.142
Q15	775	1	5	3.4	1.487
Q16	775	1	5	2.84	1.329
Q17s3	769	0	2	0.24	0.517
V5	772	1	5	3.33	0.75

Both two models (Table 6 and Table 7) did not provide strong explanatory power (R^2 are almost under 10%). However, as a preliminary set of results, these tables show interesting findings.

First, Q8, the having some plan or guideline of conserving natural environment is the most important factor for subjective performance evaluation. If the municipality has some natural environmental plan, it could get more budget and implement effectively. But we do not have any budget data, so this is only our hypothesis. We should also treat this variable carefully, because respondents having some plan or guideline of conserving natural environment in municipalities have some biases to want to respond positively to their implementation performances. The coefficients for Q11, which evaluates only environmental conservation, are bigger than for those of Q12, which evaluates from more general wider perspective in both models. Second, Q13, the monitoring of natural environmental conditions is the second important factor for subjective performance evaluation. Third, regarding management methods of Q14 to Q16, only bottom-up decision-making is significant to general wide subjective performance evaluation.[11] This means that civic participation is relevant to environmental outcomes in contrary to Newig et al (2009). Fourth, the MLG factor (Q17s3) is not significant even in 10%, but seems more important in general wide perspective. If a local official knows IPBES, then the subjective performance would increase. We can suppose that a good MLG needs

Table 6. Coefficients[a] (Q11)

R2=.084	B	S.E.	Beta	Significance
(constant)	3.448	0.155		0***
Q8	0.313	0.052	0.225	0***
Q13	0.209	0.05	0.149	0***
Q14	−0.005	0.021	−0.009	0.793
Q15	−0.022	0.017	−0.048	0.192
Q16	0.016	0.018	0.031	0.391
Q17s3	0.044	0.047	0.034	0.355
V5	−0.023	0.034	−0.025	0.507

a. dependent variable Q11 ***<.001, **<.01, *<.05, †<.10

Table 7. Coefficients[a] (Q12)

R2=.045	B	S.E.	Beta	Significance
(constant)	3.333	0.148		0***
Q8	0.194	0.05	0.15	0***
Q13	0.15	0.048	0.114	0.002**
Q14	−0.013	0.02	−0.023	0.523
Q15	0.008	0.016	0.019	0.604
Q16	0.035	0.018	0.074	0.045*
Q17s3	0.07	0.045	0.057	0.122
V5	−0.003	0.033	−0.004	0.921

a. dependent variable Q12 ***<.001, **<.01, *<.05, †<.10

a wider perspective, and that municipalities that have officials who have good knowledge of IPBES can better implement biodiversity programs. Fifth, the population size of each municipality as a control variable is not related to subjective performance in contrary to our expectation. We are not sure of the reason. R^2 did not so change even if we included this control variable.

As previously mentioned, more sophisticated analysis is needed as well as work on the theory and verification of effectiveness.

IX.   Conclusion

MLG can be defined as the political coordination system or institution where the interdependent situation of problems goes beyond each administrative jurisdiction. If we classify MLG into 3 types: top-down governmental relations (type 1), bottom-up participation (type 2), and top-down mandated participatory planning (type 3), IPBES and biodiversity policy could be classified as type 3. However, IPBES does not have any coercion over nation states and

11)   In previous only web survey analysis, we found that Q14 regarding management flexibility was significant at the 5% level when analysed from a more general wider perspective and was also significant when analysed environmental conservation samples. Adaptive management was better than scientific management only in this area. However, in all (adding mail) survey, the effect was not founded.

municipalities, unlike the EU that has structural funds. Global biodiversity assessment in IPBES does not affect the LBSAPs in small municipalities in Japan, although it does affect the NBSAP and LBSAPs in prefectures and big cities. IPBES is not popular when compared to IPCC; as such, education programs are now being widely implemented. Our survey analysis shows that the significant factors for subjective performance evaluation are having natural environmental plan, monitoring, bottom-up decision-making and awareness of IPBES. Our paper suggests that Japan's national government should make some institutions for connecting global IPBES assessments and small local municipalities LBSAPs.

Questionnaire List (underline is added by author for highlighting)

Q11. Do you think that the programs that your municipality is implementing are going well from the perspective of natural environmental conservation?

Q12. Do you think that the programs that your municipality is implementing are going well from a general perspective, including the relationships to local stakeholders?

Q8. Does your municipality have some plan or guideline of conserving natural environment?

Q13. Does your municipality measure or monitor the natural environment conditions (bio number or living situation etc.) for evaluating the performance of program implementation?

Q14. If you find that the program performances are different from the primary expectation as a result of the measurement or monitoring:

   A. We <u>keep the primary numerical goals</u> and continue implementing the programs through the planned period.

   B. We consider the <u>review of programs and implementation system</u> in response to the results of the measurement or monitoring.

Q15. The purpose of the programs is supposed to be:

   A. <u>Only natural environmental conservation activities</u>.

   B. <u>Various activities</u> including local developments.

Q16. The decision-making of the program implementation or change is based on:

   A. The <u>administrative agencies and environmental experts</u>' knowledge.

   B. The <u>consultation</u> of local stakeholders or civic people.

Q17s3. Do you <u>know IPBES</u>?

<div align="right">(underline for exaggeration by author)</div>

References

Bache, Ian & Matthew Flinders (2015) "Introduction," in *Multi-level Governance: Essential Readings Vol.I & II*, Cheltenham, UK and Northampton, US: Edward Elgar.

Barletti, Juan Pablo Sarmiento and Anne M. Larson, with Antoine Libert Amico, Kristen Evans, Natalia Cisneros, Joanna Durbin and Laura Kowler (2018) "Does the Monitoring of Local Governance Improve Transparency? Lessons from Three Approaches in Subnational Jurisdictions," *Infobrief,* 234: 1−6, DOI: 10.17528/cifor/007048, accessed on 23 May 2019.

Baynham-Herd, Zachary, Tatsuya Amano, William J. Sutherland and Paul F. Donald (2018) "Governance Explains Variation in National Responses to the Biodiversity Crisis," *Environmental Conservation*, 45(4): 407−418, https://www.cambridge.org/core/services/aop-cambridge-core/content/view/2528FDE60EADD3DB9BD5A713B2EDD4B1/S037689291700056Xa.pdf/governance_explains_variation_in_national_responses_to_the_biodiversity_crisis.pdf, accessed on 23 May 2019.

Brooks, Thomas M., John F. Lamoreux and Jorge Soberon (2014) "IPBES≠IPCC," *Trends in Ecology & Evolution,* 29(10): 543−545, https://www.sciencedirect.com/science/article/pii/S0169534714001785 /, accessed on 15 November 2018.

Carmen, Esther, Allan Watt and Juliette Young (2018) "Arguing for Biodiversity in Practice: A Case Study form the UK," *Biodiversity Conservation,* 27: 1599−1617, https://doi.org/10.1007/s10531-016-1264-x, accessed on 23 May 2019.

Daniell, K. A. and Kay, A. (2017) *Multi-level Governance: Conceptual Challenges*

and Case Studies from Australia, Canberra: Australian National University Press.

Diaz, Sandra et al. (2018) "Assessing Nature's Contributions to People: Recognizing Culture, and Diverse Sources of Knowledge, can Improve Assessments," *Science,* 359(6373): 270‒272. Also Supplementary Material, http://www.wciencemag.org/content/359/6373/270/suppl/DC1, accessed on 5 March 2019.

Diaz, Sandra et al. (2015) "The IPBES Conceptual Framework - Connecting Nature and People," *Current Opinion in Environmental Sustainability,* 14: 1‒16, https://www.sciencedirect.com/science/article/pii/S187734351400116X/, accessed on 12 June 2018.

Fairbrass, J. and Jordan, A. (2004) "Multi-level governance and environmental policy," in I. Bache and M. Flinders eds., *Multi-Level Governance*, Oxford: Oxford University Press, 147‒64.

Frey, B. S. and Eichenberger, R. (1996) "FOCJ: Competitive Governments for Europe," *International Review of Law and Economics,* 16: 315‒27.

Hashimoto, Shizuka and Saito Osamu (2014) *Rural Planning and Ecosystem Services,* (in Japanese), Tokyo: Noson Tokei Shuppan.

Hunt, J. (1999) "Interdisciplinary Approaches to EU Decision-Making: Law, Politics and the Multi-Levelled Governance Regime," Working Paper 4/99 (Centre for the Study of Law in Europe, University of Leeds).

Imber, Mark F. (2007) « International Organization, » in Mark Bevir ed., *Encyclopedia of Governance*, Vol.1, Sage, 478‒482.

Inoue, M. and Shivakoti, G. P. (2015) *Multi-level Forest Governance in Asia: Concepts, Challenges and the Way Forward*, Thousand Oaks: Sage.

Ito, Shuichiro (2002) *The Dynamics of Policy Process in Local Governments: Policy Innovation and Diffusion*, (in Japanese), Tokyo: Keio University Press.

Knill C. and Tosun, J. (2008) "Emerging Patterns of Multi-level Governance in EU Environmental Policy," in T. Conzelmann and R. Smith (eds), *Multi-level Governance in the European Union: Taking Stock and Looking Ahead*, Baden Baden: Nomos, 145‒62.

Kohsaka, Ryo (2012) "What is the Convention of Biological Diversity?: Between Science and Politics," in Norio Yamamura ed., *How Do We Take Advantage of Biodiversity: Consideration of its Conservation, Use and Distribution,* (in Japanese), Tokyo: Showado.

Marsh, D. and Furlong. P. (2002) "Ontology and Epistemology in Political Science" in D. Marsh and G. Stoker (eds), *Theory and Methods in Political Science* (Second

Edition). Basingstoke: Palgrave Macmillan, 32–41.

Newig, Jens and Tomas M. Koontz (2014) "Multi-level Governance, Policy Implementation and Participation: The EU's Mandated Participatory Planning Approach to Implementing Environmental Policy," *Journal of European Public Policy,* 21(2): 248–67, https://www.tandfonline.com/doi/pdf/10.1080/13501763.201 3.834070?needAccess=true, accessed on 4 April 2019.

Newig, Jens and Okiver Fritsch (2009) "Environmental Governance: Participatory, Multi-Level – and Effective?" *Environmental Policy and Governance,* 19: 197– 214, https://onlinelibrary.wiley.com/doi/epdf/10.1002/eet.509, accessed on 4 April 2019.

Oda, Yuki and Kosuke Oyama (2019) "The Analysis on the Factors to Set Local Biodiversity Strategy and Action Plans: The Validation of Policy Diffusion Model in Municipalities," (in Japanese), *Kokyo Seisaku Kenkyu (Journal of Public Policy Studies),* 18: 90–102.

Oyama, Kosuke (2017a) "The Concept of Governance in Social-Ecological System Theory: IPBES, Ostrom, and Public Governance," (in Japanese), *Hogaku Kenkyu (Journal of Law, Politics and Sociology),* 90(3): 1–31.

Oyama, Kosuke (2017b) "IPBES: The Multilevel Governance for Conserving Biodiversity: The Review of Some Previous Studies," (in Japanese), *Nogyou Keikaku Gakkai-shi (Journal of Rural Planning),* 36(1): 38–41, https://www. jstage.jst.go.jp/article/arp/36/1/36_38/_pdf/-char/ja, accessed on 4 April 2019.

Rabe, B. G. (2007) "Beyond Kyoto: Climate Change Policy in Multilevel Governance Systems," *Governance*, 20(3), 423–44.

Saunier, Richard E. and Richard A. Meganck eds. (2009) *Dictionary and Introduction to Global Environmental Governance, 2nd.,* (Earthscan).

Stephenson, P. (2013) "Twenty Years of Multi-level Governance: 'Where Does It Come From? What Is It? Where Is It Going?'," *Journal of European Public Policy*, 20(6), 817–37.

UN Environment (2019) "Major Groups & Stakeholders," in UN Environment [online]. United Nations Environment Programme. Available at: https://www. unenvironment.org/civil-society-engagement/why-civil-society-matters/major-groups-stakeholders, accessed on 14 May 2019.

Uchiyama, Yuta and Ryo Kohsaka (2019) "Application of the City Biodiversity Index to Populated Cities in Japan: Influence of the Social and Ecological Characteristics on Indicator-based Management," *Ecological Indicators,* 106, 105420, https://authors.elsevier.com/c/1ZAjE,XRNLcru6, accessed on 6 June

2019.

Ueta, Kazuhiro (2008) "Multi-level Environmental Governance in Sustainable Development," (in Japanese), *Shakaigaku Nenpo* (*Annual Reports of the Tohoku Sociological Soceity*), 37: 31–41, https://www.jstage.jst.go.jp/article/tss/37/0/37_31/_pdf/-char/ja, accessed on 4 April 2019.

Velten, Sarah, Tamara Shaal, Julia Leventon, Jan Hanspach, Joern Fischer and Jens Newig (2018) "Rethinking Biodiversity Governance in European Agricultural Landscapes: Acceptability of Alternative Governance Scenarios," *Land Use Policy,* 77: 84–93, https://www.sciencedirect.com/science/article/pii/S0264837717312942, accessed on 23 May 2019.

Waelti, Sonja (2004) "How Multilevel Structures Affect Environmental Policy in Industrialized Countries," *Euoropean Journal of Political Research,* 43: 599–634, https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1475-6765.2004.00167.x, accessed on 4 April 2019.

Yamamoto, Yuji, Mamoru Taniguchi and Ryoji Matsunaka (2007) "The Issues and Actual Condition of Policies Concerning Conservation of Biodiversity: Intended for Prefectural Governments," (in Japanese), *Kankyou Sisutemu Kenkyu Ronbunshu (Environmental Systems Research),* 35: 73–80.