

The Case for Biome Stewardship Councils

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Abstract

Protecting global ecosystems is often hindered by the problem of insufficient political will within countries and the need for effective cross-boundary management. We propose here a novel solution in which the biome itself (i.e., large ecosystems with similar climate, soils, plants, and animals) becomes the basic governance unit. Biome Stewardship Councils would comprise groups of individuals elected or nominated by local community organizations that reside in the regions making up their respective biomes, including a few government officials who are deemed to be particularly sensitive to ecosystem protection. The goal of Biome Stewardship Councils would be to maximize ecosystem protection and human welfare within a biome. They would lead regional collaboration to characterize threats to ecosystem services within the biome and develop and apply strategies to restore and maintain healthy services.

Background

The distressing news from the Millennium Ecosystem Assessment (MA) is that human impacts have been detrimental in practically every biome, from Mediterranean forests to the tundra. Even in the relatively optimistic scenarios that were considered, *Techno Garden* and *Adapting Mosaic*, these impacts are projected to worsen to varying degrees and rates over the next half century or so (MEA 2005). But what is also clear is that, at the local level, there are many opportunities to achieve positive synergies and enhance ecosystem services to improve human welfare. The most promising pathways open to us

are to create the appropriate incentives and institutional arrangements at the local and regional levels to tap into these synergies, and to find ways to coordinate activities across ever larger scales up to the global level.

The parallels of the MA's findings with the more specific concern about climate change are instructive. The Intergovernmental Panel on Climate Change (IPCC) was also a large-scale collaborative scientific endeavor to gauge the global scope and impacts of significant human-induced change on the natural environment. The similarities in effort, rigor and objectivity are expressed in the legitimacy of both enterprises as scientific assessments. The IPCC, however, was initiated and to a large degree supported by national governments, whereas the MA was developed and orchestrated by civil society organizations, with the endorsement of intergovernmental agencies. The response to climate change has predictably relied on the commitments and actions of individual countries that are parties to intergovernmental agreements. This is possible because greenhouse gas emissions can, for the most part, be related to national accounts, and responsibilities can be assigned based on quantifiable targets.

The MA, on the other hand, reveals a much more complex and web-like structure in the links between ecosystems and human activity at multiple scales. It is difficult to treat ecosystem integrity as a fungible quantity that can be regulated and given a tradable value in a manner commensurate to, say, greenhouse gas emissions. Similarly, while the monotonic relationship between economic growth and energy use, and therefore greenhouse gas emissions, largely holds true through the so-called "IPAT" equation, it is

much harder to make this connection between wealth creation and ecosystem damage. While population, affluence and technology do collectively influence ecosystems, other more qualitative factors such as cultural practices and social relations can be equally important in determining the kinds of ecosystem change that result. Poverty itself can be a cause of the degradation of natural resources, but persistent environmental degradation by both rich and poor countries can contribute to poverty, particularly for those whose livelihoods depend directly and proximately on the security of natural capital. Equally importantly, natural resource and ecosystem boundaries often have little or no necessary relation to national borders. A given country’s policies do of course matter very significantly in determining the health of its ecosystems, but often less so than the practices of groups living within a biome, which may be similar across political borders. By comparison, while climate impacts are obviously transnational in scope, national economic and energy policies are profoundly important for determining outcomes (see Table 1).

Table 1. Main differences between climate change and ecosystem damage.

Climate Change	Ecosystem Damage
Human-induced drivers are simple to understand and relatively well-known: greenhouse gas emissions, which are in turn tied to energy use and land-use change	Human-induced drivers are complex: shifting populations and livestock; industrial, agricultural practices; land-use change; climate change; etc.
Easily quantifiable sources of emissions, making it relatively easy to develop cap-and-trade policies	Ecosystem “bads” harder to quantify in commensurate terms across contexts.

National policies can make a direct and significant impact; possible to separate out large polluters from small polluters.	National policies need to be extremely well coordinated across different types of ecosystems. May not be easy to make quantifiable distinction among countries on the basis of whether or not their actions will have significant impact on global ecosystem damage
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All this suggests that it is much more difficult to formulate a response to the findings of the MA in a way that is exactly parallel to the response to the threat of climate change. Perhaps as a reflection of the enormous difficulty in defining an appropriate political platform for initiating decision-making around ecosystem management, therefore, the MA's Responses Working Group has provided a generic, if not facile, set of recommendations. These include the call for improved coordination among the different levels of decision-making processes; integration; transparent participatory approaches; considering trade-off and synergies explicitly; and creating the proper enabling conditions such as good governance and appropriate institutions.

While a successful response to the global ecological crisis will undoubtedly require these elements in some broad sense, a far more specific set of policy options could be developed if clearer connections were drawn between the widespread threat to ecosystems (and thereby to the welfare of humanity at large) and the need for a correspondingly expansive and globally articulated strategy. The MA's findings are, after

all, only the latest in a long series of reports describing global threats to human welfare with strong local impacts—climate change, extreme poverty, AIDS, and terrorism. None of these can be easily circumscribed by national boundaries and therefore point in the direction of a novel mixture of local and global policies.

At the very least, this class of problems requires regional if not international collaboration to characterize the dangers and develop strategies to address them. More often than not, the most effective solutions entail concerted action that transcends official country-level collaboration. Often working in a crisis management mode, networks of governmental, inter-governmental and non-governmental actors with specific expertise are typically called upon to attend to problem clusters in various locations around the world. For instance, medical teams from private hospitals, Médecins Sans Frontières and the International Red Cross with logistical support from United Nations relief agencies work independently of national governments to provide medical services for people who are rendered stateless by war or severe natural calamity. Similarly, intelligence gathering by local police agencies across countries working with the United Nations Office of Drugs and Crime and the U.S. State Department is necessary to apprehend international drug traffickers. Although such networks generally seem to take shape only for makeshift emergency operations, they are usually sufficiently important to become more permanent institutional arrangements, with systematic relationships built across agencies and organizations for long-term strategic cooperation.

An intriguing question that needs further exploration is whether analogous trans-boundary solutions in the form of quasi-governmental networks are appropriate and feasible for addressing the clear and present danger to the world's ecosystems. The fact that regional and global institutional arrangements are essential for sustainability is no longer controversial. But the formation and character of a legitimate and effective global politics and administration are far from obvious. In this paper, I propose an adaptive governance framework for trans-border ecosystem management.

Biome Stewardship Councils

A biome is a natural ecological unit that is derived from the understanding that forms of life associated together in the same area share certain common elements by virtue of belonging to a single habitat. (While any group of living and nonliving things interacting with each other can be considered as an ecosystem, biomes can be understood simply as large ecosystems comprising habitats of similar climate and vegetation). The close linkages and interdependencies among the soil, flora and fauna within a biome can produce homeostasis, an open system whose structure and functions are maintained through multiple equilibriums.

Historically, humans have adapted best to their biomes whenever they have engaged in mutually supportive interactions. But to say this is not to reduce the complexity of social organization into biological terms involving the mere extraction of economic value from natural capital. It is, rather, to acknowledge that the prospects to enhance human well-being over the long-term depend crucially on the ability of societies to shift their

practices towards sustainable forms after recognizing both the constraints that their natural environment places on them as well as the opportunities it affords. Indeed, this is the single most consistent message running through the myriad pages of the MA, which shows that although current patterns of human activity are causing over 60 percent of the earth's economically valuable ecosystem services to be degraded, there are many opportunities to reverse this trend while enhancing human welfare.

The MA identifies 14 types of biomes around the world. To the extent that each biome shares roughly similar types of life-forms, soil and climate, it is fair to assume that in their geographical extent they would provide comparable forms of ecosystem services. Undoubtedly, the forms and rates of extraction of social and economic value will vary widely within the same biome, depending on the way the societies are organized, their technological capabilities and wealth, policies with regard to environmental protection, and lifestyles. In other words, while it is true for instance that montane grasslands and shrublands in the Andes and East and Central Africa share similar ecological features and climate, there are significant differences in social and economic conditions, not to mention political systems and cultural practices. Given the similarities in natural capital, however, it is quite likely residents in both parts of the world will share many living and working conditions related to farming and crop type, livestock, housing construction, access to water, etc., although the differences in the ecological efficiency of the use of natural capital will largely be a function of the existing human, institutional and technological capital. In short, there will be many significant opportunities for social

formations within a given biome to learn usefully from each other on best practices to obtain ecosystem services.

The governance framework I propose is to develop a Biome Stewardship Council (BSCs) for each biome defined in the MA plus one for coastal and marine fisheries¹. In other words, there will be 15 BSCs, each in charge of managing a single global biome. To begin with, each BSC would consist of a group of individuals elected or nominated by local community organizations that reside in the regions making up a biome, including a few government officials who are deemed to be particularly sensitive to ecosystem protection. To ensure public confidence, the rules for developing BSCs would need to come from input from extensive consultation from stakeholders who may, for instance, decide that a “biomic constitution” is warranted. Whatever the final outcome of these consultations, it is important that certain key principles be adhered to, namely that the council members a) be properly *representative* of the stakeholder groups resident to the biome; b) function through internal rules of *legitimacy*, and c) uphold basic *values* of ecological stewardship.

¹ Note that the biomes described in the MA correspond roughly to those defined by the World Wildlife Fund, which are themselves agglomerates of more than 825 terrestrial eco-regions (<http://www.worldwildlife.org/science/ecoregions.cfm>). Although the eco-regions are even more uniform biological units than biomes, many are sub-national and it would be potentially self-defeating to treat them as independent governance entities. Also, the borders of biomes should not be considered static boundaries, but as corresponding roughly to crossover regions across areas with different bioclimatic characteristics.

Each of these principles can be satisfied in multiple ways, but the most effective solution would be one that has simple rules developed through stakeholder input that are then consistently applied. For instance, within each biome, the numbers of council members could be in proportion to the corresponding populations, with additional representatives from the member governments. Thus, if there are 200 million people resident in Biome A and there are 20 countries intersecting the biome, one model would have a single popular (e.g., elected) representative for every 2 million residents plus one government (e.g., nominated) representative for each country, resulting in 120 council members. Initially, at least, it is conceivable that the popular candidates are proposed by local community organizations within the sub-regions on the basis of their service to the community and involvement with promoting sustainability.

Council rules may require open (e.g., internet-based) meetings with time made available for public comment and involvement. BSCs should have explicit mandates to receive (and be responsive to) inputs from local communities. A clear chain of two-way communication between local stakeholder groups and the BSC should be developed from early on, with training programs built into the process to enhance local capacity for participation. The council members could determine their own rules of procedure for internal discussion, formation of committees and office-bearers, voting on proposals, and so on, as developed in other legislative organizations around the world. Council members should also have staggered terms and term-limits, with provisions for rotating terms for committee membership, and generally adopt rules to reduce the opportunity for the consolidation of power while remaining an effective and informed governing body.

Functions of the BSC

The principal mandate of the BSC should be to maximize both ecosystem protection and human welfare within the biome. Its starting framework should therefore be organized around basic principles of sustainable development (as defined, for instance, by the Brundtland Commission). To the extent possible, the nomination or election of council members should be based on their stated and demonstrated commitment to these principles at local, regional and global scales. Since biomes typically stretch across many countries, and given the strong representation of local communities, it is unlikely that any single government's recalcitrance will disrupt the BSC's overall commitment towards sustainability.

Each BSC should be provided well-trained support staff in the form of a small technical secretariat, whose functions would include data collection and analysis as well as local capacity building. Large international environmental and development organizations should lend their support and technical resources to these secretariats, as should academic and professional ecologists, and the staff of well-organized environment and forestry departments of national governments. Such support could include training as well as the provision of information and models and consulting services, as necessary. But, to retain the legitimacy of the council, the involvement of outside organizations should be restricted to the sharing of resources and capacity building. Special efforts also need to be made to ensure gender parity for both the BSC and secretariat staff, with special attention given the traditional role of women as custodians of natural resources.

The idea of developing formal transnational organizations to take on the responsibility for monitoring, evaluating and eventually regulating ecosystem health and services is not entirely unprecedented. The Arctic Council can be viewed as an early example of a BSC, in which governmental and non-governmental actors are focused on the social, economic and environmental conditions of the Arctic tundra². However, it doesn't include popular representation or regulatory function. The BSCs would also differ from the forestry and environment departments of the countries they represent. In the early years, they would complement each other, but over time, it is meaningful to consider the BSCs relegating the latter to a relatively minor role. In the next section, I shall try to explain the logic of this apparent concession of sovereignty, but I want first to lay out a scenario for how the BSC's functions will evolve.

One of the first major responsibilities of the BSCs would be to review MA's sub-global assessments that are relevant to the respective biomes, and to enhance them with local knowledge to understand threats, opportunities and best practices. Subsequently, they should develop guidelines and capacity building exercises that seek to tap into the self-

² The Arctic Council is an inter-governmental forum for cooperation among national governments and indigenous peoples spanning the Arctic region. In addition to the Foreign Ministers of 8 countries, there are Permanent Representatives from 6 organizations for indigenous peoples in the Council. The Council currently functions as a high-level forum for developing joint policy guidelines for national governments to implement, based on research findings it sponsors. More information on the Arctic Council and its activities and governance structure can be found at <http://www.arctic-council.org>.

interest of local residents to become custodians of their local surroundings. These early tasks will be useful in building trust in the organization, and help the BSC itself develop its own institutional capacity. While it would not really have political authority in the sense of being able to *enforce* changes in practices, its quasi-public role as an elected body would provide it with the legitimacy needed to advise national and local governments as well as local residents on how to improve the environmental efficiency of extracting ecosystem services. Its muted though discernible presence as a responsible and elected body will in turn provide multilateral organizations and national governments with the confidence to cede new functions to them, much the same way that public-private partnerships are developing between governments and NGOs and profit-driven entities.

Over a period of time, the BSCs themselves would authorize performance-based incentives to local community groups in order to maximize ecosystem protection without diminishing services. For instance, much like utility commissions that are mandated to set rates for water and electricity services, the committees set up by the BSCs would be able to set up a system of rewards and penalties depending on how ecosystem services are managed for, say, a given watershed or coastal zone. The authority for such rule-making would be contingent on two crucial though not unrealistic legal and political steps taking place. The first is the negotiation of an international treaty based on the Convention on Biological Diversity to provide BSCs with the authority to form trans-border rules relating to ecosystem protection. The second is the ratification of the treaty, which would

entail the loan of member government resources and personnel for enforcement of the BSCs rules.

To the extent that the rule-making power of the BSCs will be limited to adaptive and flexible forms of performance-based pricing and regulation of services tied to such issues as the prevention or management of floods, drought, and land degradation without causing *direct* interference in more politically sensitive concerns such as land-tenure or water rights, it seems likely that they will have effective authority to implement their policies. But also because they would have gained legitimacy as elected bodies and through their performance and stakeholder involvement during their formative years, as it were, there would face less resistance from individual governments than would, say, civil society organizations that operate on a global scale. Similarly, by learning from existing participatory forms of ecological stewardship such as joint forest management, the BSCs will also gain legitimacy and political power “from below,” especially if they continue to ensure room for participatory mechanisms to filter up into their rule development.

BSCs may occasionally find themselves being at cross-purposes with a country’s environmental policies, and even with one other. For instance, a given country’s national wildlife protection policy may be inconsistent with a BSC’s global concern to allow sustainable hunting of certain species to provide food and income for local populations. Similarly, species encroachment or resource depletion across neighboring biomes may result from a BSC’s policies, with adverse implications for its neighbor. It is obviously impossible to anticipate the full range of such conflicts, but setting in place adequate

mechanisms for arbitration and negotiation may alleviate their intensity. It may, for instance, be good practice to set up an ombudsman's office at the international level early in the process of setting up BSCs. Similarly, biennial summits of all the BSCs may be useful for trading ideas and building trust among all the BSC members.

Funding for the BSCs will likely come from two different sources. In the early years, multilateral donor agencies and private foundations will provide a pool of funds for creating the BSCs and their secretariats. Given their largely advisory rather than regulatory role during this period, the resources required for the BSCs will be modest relative to the substantial sums of money expended by the donor community on disparate and often poorly coordinated conservation efforts. Together, the 15 BSCs will probably support fewer than 1000 full-time staff, and when combined with all their project and infrastructure requirements, about \$150 million per year will probably be sufficient during the first five years or so of their operation. During this period, efforts could perhaps be made to design and collect a small excise on revenue streams generated by the ensuing improvements in ecosystem services, with no net losses for the stakeholders. In addition, revenues from ecotourism as well as a reasonable fraction of national governments' forest protection budgets pooled together could contribute to the BSCs. Alternatively, if a Tobin tax were to be levied on all international transactions, a small portion could be used to fund the BSCs on the grounds that much of global commerce is responsible for increasing the ecological footprint of modern lifestyles.

How will the BSCs acquire sovereignty?

The single most common criticism that a proposal like the one outlined above will face is that it is naive to expect countries to cede their sovereignty to a regional or international authority, even if it only covers a few relatively minor sectors from the standpoint of national security. Under what possible circumstance, one might ask, will the United States Forest Service and the Environmental Protection Agency allow a handful of international agencies to take over their key functions? Similarly, why would Sweden abide by the ruling of the Tundra BSC?

One answer to this criticism is quite straightforward. Since around the time of the Bretton Woods agreement, the world has seen several international regimes to which countries cede their sovereignty. Thus, the Nuclear Non-Proliferation Treaty has required all but eight countries (three that did not sign it plus five that were “grandfathered” as nuclear powers) around the world to be subject to what might ordinarily call intrusive regulations. More recently, the World Trade Organization has routinely developed rulings that even the most powerful countries in the world have been forced to comply with. The European Union is yet another example of rule-making at the supra-national level, a concession that was agreed to by the member states on the understanding that it was of advantage to all to have a continent-wide regime to govern certain issues like standards for education, health and the environment.

This is not to suggest that these institutions are not resisted; there are of course bitter conflicts related to all the examples mentioned above. But the commitment of national

leaders to maintain them is sufficiently strong that it seems unlikely that they will unravel easily. Moreover, in each case, their legitimacy has already been sealed by the countries themselves, whose legislatures ratified them in the past. In other words, the political question of whether or not to allow outside institutions to play a role in domestic affairs has already been addressed historically, arguably in a reasonable way, inasmuch as the parties that took the decision were legitimate representatives. Barring the rare case of a later government backtracking on an international agreement formed by a previous one, many supra-national regimes seem surprisingly durable. (This did happen with the Kyoto protocol by the Bush and Howard governments in the U.S. and Australia, respectively. However, it is important to note that neither country's legislature had yet ratified it).

A second issue has to do with the relatively unobtrusive framework of the BSC proposal. Because of its phased introduction, it should be unthreatening in the early years precisely because no government function would be replaced. Rather, it would operate through a series of learning steps and confidence building measures, developing trust both from its constituency and from government agencies and the executives in the countries it operates in. To the extent that its subsequent development would itself be contingent on an international agreement being drawn, the BSC would not be threatening to national governments. Furthermore, since the precise boundaries of biomes are fuzzy and because they are non-contiguous across continents, the BSC need not ever be viewed threateningly as a political unit having *territorial* borders, but rather as a functional governance entity concerned with particular types of ecosystems. Conversely, a single

country may have many biomes, so that the national government may justifiably think of itself as literally “outsourcing” its ecosystem management functions to multiple BSCs.

Third, national governments are themselves forming a variety of networks while recognizing the need for broader strategic cooperation on critical issues. Examples can be found in the Alliance of Small Island States, which is focused on addressing the impacts of climate change, and the G20, which is developing a concerted developing country trade strategy. Sometimes, these networks are less formally defined and comprise government officials and legislators. For instance, the Global Legislators for a Balanced Environment (GLOBE) was founded in 1989 primarily in the form of an environmental NGO with parliamentarians who seek to share information and potentially develop coordinated policy on the environment. There are several other networks of legislators, judges and bureaucrats through which the participants formulate new ideas together and pursue common goals, resulting in what has been termed “disaggregated sovereignty (Slaughter 2004).”

Whereas traditional concepts of sovereignty emphasized separation into territorially independent groups, new ideas about sovereignty focus on the positive capacity to participate collectively in international institutions to address global and regional problems collectively by accepting mutual obligation (Chayes & Chayes 1995). In this context, the BSCs can be seen as constituting yet another network that has the unique feature of strengthening existing ad hoc transnational arrangements among governmental and non-governmental agencies but with the additional legitimacy of democratic input. In

some ways, nevertheless, the BSC involves a more radical shift in sovereignty than, say, climate treaties, whose enforcement would take place primarily at the national level. For, even if national governments were to provide support for enforcement capability, the BSCs would have the ultimate authority to penalize and reward parties under its jurisdiction, albeit on a narrower basis.

In general terms, the tendency is for these types of institutional arrangements to confer rights and solicit responsibilities at different levels based on the principle of subsidiarity, where governing bodies perform tasks that are best suited to their scale of operation. Thus, local authorities may be associated primarily with the management of the local economy, policing functions and service provision of education, housing, transportation, and health care; eco-regional governments would be responsible for the planning aspects of many of these same concerns within the context of ecosystem demands and constraints; continental scale administrations and global politics would be relevant for resolving inter-regional conflicts and managing commerce, and relate generally to matters of worldwide concern.

Lastly, it is important to point out the ethical basis for developing global institutions that may end up restricting a few privileges, especially for the wealthy countries that are typically most resistant to such limits, in order to enhance ecosystem services and human welfare for all. Thomas Pogge thus explains why it is no longer tenable to pretend that one's supposed private actions are immune from global consequence:

We are not bystanders who find ourselves confronted with foreign deprivations whose origins are wholly unconnected to ourselves... First, their social starting positions and ours have emerged from a single historical process that was pervaded by massive grievous wrongs... Second, they and we depend on a single natural resource base, from the benefits of which they are largely, and without compensation, excluded... Third, they and we coexist within a single global economic order that has a strong tendency to perpetuate and even aggravate global inequality (Pogge 2001: 11).

Conclusions

At the dawn of the 21st century, there is little doubt that the future of humanity rests on our ability to retool our institutions to maintain the vitality of the fragile ecosystems that support us. It is also increasingly clear that national governments alone cannot be entrusted to the task, given their competing priorities and the poor correlation between political and natural boundaries. Furthermore, the non-linearities of ecosystem change and the complex relationships between human activity and ecosystem services call for political responses that stretch the capacity of any given nation-state, but also entail local knowledge that is often too fine-grained to be reliably addressed by any global inter-governmental entity. And, finally, the conventional picture of distinct societies, cultures, and publics having (relatively) self-contained obligations towards each other and our environment is increasingly hard to defend. An incremental adaptive institutional

framework that is supra-national but sub-global offers therefore a practical way to govern the global commons.

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