

A Sustainable Agriculture Amendment: Incorporating Sustainable Agriculture into International Environmental Negotiations

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Although many contend that modern technology can and will continue to provide solutions to our mounting environmental problems (a dangerous cycle referred to by critics as the “technological treadmill”), there is growing concern that the entire premise underlying the industrial model is unsustainable and failing fast. The legacy of the Industrial Revolution is a downward spiral towards ecological and social collapse. The rate of this descent is increasing rapidly as developing countries continue to model their growth on the developed world’s example of consumption and exploitation despite the many lessons learned that warn sternly against such “progress.”

This concern is especially true of industrial food production. Also called “conventional” or “modern” agriculture, the industrial model has been responsible for soaring productivity over the past 80 years as a result of mechanization, specialization, large capital investment, increased chemical inputs, and the support of government policies that subsidize and promote high-yielding technologies (SAREP 2004; Gold 1999). Fewer hands producing greater quantities of food has permitted the labor force to be utilized in other sectors, thus contributing to the bounty evident in much of the developed world. Perceiving so many apparent advantages, the developing world has been quick to follow the lead. The “catch” that both the developing and developed nations have not yet realized, *but must*, is the profound environmental and social costs inherent in the system.

Sustainable agriculture has emerged in recent years as an alternative system that can ameliorate many of the environmental and social problems caused by industrializing food production. Sustainable agriculture has many definitions, yet there is a common recognition of sustainable agriculture as both a philosophy and a production methodology based on the holistic coordination of the stewardship of natural and human resources, economic profitability, and social quality of life. Thus, sustainable agriculture presents a positive model for continued agricultural production capable of supporting a growing world population nutritionally, socially, ecologically, and economically.

Agenda 21 and other international proclamations, such as the Brundtland Commission Report, have credited sustainable agriculture as being a critical solution to the demands of a growing world, yet the model remains largely untapped. This paper seeks to determine the best means to recognize and validate the sustainable agriculture model in hopes of instigating its wider acceptance. While I agree that a convention on sustainable agriculture is a necessary and appropriate measure for assisting in the achievement of this goal, this paper focuses on another tactic as an important preliminary step—a multi-treaty amendment that would integrate sustainable agriculture into a number of already established environmental agreements.

A Growing Need

Agriculture remains one of the most fundamental needs inherent to all nations, since every country must feed its people. One of the very promises ingrained in industrial agriculture is the ability to generate yields so large that no country's people would be hungry.

Unfortunately, despite best intentions the industrializing and standardizing of agricultural systems has left many countries with increased poverty, hunger, widespread environmental degradation, weakened communities, and damaged economies. Although the subsidizing of industrial agricultural inputs, such as pesticides and irrigation water, creates the false perception that food is being produced in the most cost-effective and therefore "preferred" manner, the masked costs to our environment, our health, and our communities are just beginning to be tallied—many may be irrecoverable.

By the year 2010, the world's population is expected to be nearly seven billion (FAO 2004). It has been estimated that to meet the concomitant food needs, the world's agricultural system will be asked to produce 75 percent more food in the next 30 years (FAO 2004). This will be extremely difficult since the world's best farmland is either already under production or quickly being developed for non-farm uses, forcing many poor farmers onto marginal lands. This reality creates an urgent need to reassess our current agricultural systems to ensure that production methods meet future demands. This reassessment will inevitably include the development of and transfer of technology, but also the return to more locally-applicable, farmer-friendly and low-input farming methods.

What is Sustainable Agriculture?

Although the precise parameters of sustainable agriculture continue to defy definition by those who study and practice them, the overarching consensus describes it as an "agricultural system which incorporates environmental health and economic profitability with social and economic equity" (Feenstra *et al.* 1997). The resulting agricultural model has a number of valid expressions based on context and location. However, of these many expressions, sustainable agriculture can never be characterized as industrial agriculture nor can it be achieved merely through changes in cultural practices alone—rotating crops and minimizing inputs can only get one so far. Entire agriculture *systems* must be assessed to determine whether they fall within the constructs of sustainability. Sustainable agriculture is not just concerned only with farms or food: The health and vitality of people, ecosystems, and economies that are ultimately at stake. Thus sustainability is envisioned in its broadest sense, from the individual farm to the local ecosystem to the communities affected both locally and globally (Gold 1999).

While sustainable systems may seem novel and progressive in the developed countries of the North, we find that the same holistic principles are inherently embedded in the local knowledge of traditional farmers still practicing in the developing world. Farmers there apply the principles of sustainable agriculture without even knowing the term exists, yet the agricultural policies of the South have not been developed to support local expressions of sustainability (Reijntjes *et al.*, 1992). When developing countries have tried to follow the Western path of industrialized production many local systems which epitomize sustainable production are replaced and ultimately lost. The solution to agricultural productivity undoubtedly varies from region to region (even within the same country) making any standardized approach to "modernization" a poor proposition (White 1993).

The three goals of sustainable agriculture—economic profitability, environmental stewardship, and quality of social life—create a holistic system that models the sustainable development mantra in general. As each goal carries equal weight, the model remains effective over the long term because it takes into consideration a balanced range of short-term needs.

Profitability

Developing countries tend to be at a significant disadvantage relative to developed countries in terms of the technology and research that is available for internally financed agricultural development. The situation is made worse by declining external investments in agriculture (called “aid fatigue”), which has recently occurred just as many developing countries have asked for funds to develop their agricultural infrastructure (Porter *et al.* 2000). Many farmers who transition to industrial agriculture are caught between declining prices for their crops (often caused by gluts in the world market as well as price-support programs) and rising prices for inputs such as fertilizers, pesticides, and fuel (Ikerd 2004).

In contrast, sustainable agriculture is designed to meet the needs of smaller and lower-income farmers. As a model it emphasizes methods that take advantage of on-farm resources and natural biological cycles and controls, tactics which are often more affordable than the capital-intensive practices of industrial agriculture (CRSEES 2004). Sustainable agriculture also offers economically viable options for consumers, policy makers and others along the entire food continuum (SAREP 2004).

There are also a number of intersects linking indigenous knowledge with sustainable practices providing nations with “local capital” from which to draw. No traditional system is perfect, but by studying traditional agriculture researchers can discover principles that will aid in the improvement of farming in the South and reform of industrialized agriculture in the North (Norberg-Hodge *et al.* 2000).

Stewardship (of Both Natural and Human Resources)

Industrial agriculture consumes fossil fuel, water, and topsoil at astonishing rates (Horriagan 2002). It profoundly affects a wide range of ecological systems, contributing to decline in soil productivity, erosion, salinization, water logging, nonpoint source and point source pollution, decline in water quality, eutrophication, pesticide resistance, reduction in biodiversity, and links to global climate change and ozone depletion. While it is true that production levels will need to be significantly increased to meet the needs of burgeoning populations, this growth must occur without depleting and degrading the land and natural resources on which agricultural production depends.

Critics of sustainable agriculture suggest its methods are low-yielding and not forward-thinking enough, therefore a poor solution considering the food demands of the 21st century. This is simply not true. While yields may initially decline during the transition period from industrialized practices to a more sustainable model, yields typically rebound within three to five years once the land is able to adapt to reduced inputs. In addition, these criticisms often neglect to consider the hidden environmental and social costs of industrial agriculture, a system of accounting that is both deceptive and dangerous. Furthermore, although sustainable agriculture promotes more traditional approaches to food production—including adapting to host ecosystems, promoting diversity on the farm, and integrating production

practices with natural cycles—sustainable agriculture remains progressive, building on current agricultural achievements and technology and in turn supporting a sophisticated approach that can maintain high yields and profits without undermining the natural resources on which agriculture depends (Norberg-Hodge *et al.* 2001).

The premise of sustainable agriculture is to meet current needs without compromising the ability of future generations. Thus, in addition to environmental stewardship, sustainable agriculture promotes the stewardship of human resources. With rampant growth in globalization, we are at an interesting point in history in that traditional and industrial societies are much more aware of each other. While for many years traditional agriculture was seen as pre-scientific, the merits of local knowledge and cultural practices are now being recognized and validated. By promoting and protecting local knowledge, sustainable agriculture is able to draw from a number of time-tested, locally entrenched, ecologically sound, and economically viable alternatives to the technocratic status quo.

Quality of Life

Sustainable agriculture promises a good quality of life, based on principles that support people as farmers, consumers, and community participants. By supporting small farms and local farmers, sustainable agriculture provides a foundation for healthy communities and economies in both urban and rural centers. Industrial agriculture, on the other hand, has systematically pushed farmers off the land, as efficiencies of scale have resulted in larger more corporate farms. In the United States, only two per cent of the population remains involved in agriculture. While this transition may have worked in the developed economy of the United States, a similar transition in India would result in 580 million of the 600 million who still live from the land being without work and pushed into urban slums (Norberg-Hodge *et al.* 2001). This number represents 54 percent of India's total population. So we find that sometimes increasing yield per labor unit is not necessarily a good thing, especially when it means taking the rural poor away from their primary job source. Furthermore, the poverty that results further perpetuates the environmental harm of the industrial model.

Sustainable Agriculture in International Policy

The merits of sustainable agriculture have been recognized on an international basis for more than 15 years. Beginning with the Brundtland Commission Report, entitled *Our Common Future*, the role of indigenous agricultural knowledge and sustainability in development was formally recognized (Brundtland 1987). At least three chapters of Agenda 21—the comprehensive sustainable development strategy of the 21st century adopted at the United Nations Conference on Environment and Development (UNCED) in June of 1993—emphasize the role of sustainable agriculture and local farmers in crafting viable solutions. In fact, sustainable agriculture is headlined in its own chapter, Chapter 14: “Sustainable Agriculture and Rural Development.” In addition, Chapter 32, “Strengthening the Role of Farmers,” formally recognizes the role that farmers as stewards of the land have to play in solving environmental problems, and Chapter 26, “Strengthening the Role of Indigenous People,” maintains the importance of local knowledge to agricultural development and sustainability throughout the globe.

A number of international environmental conventions, such as the Convention on Biodiversity or the Convention to Combat Desertification, have made references to the

importance of sustainable agriculture across the globe. To date, however, there has not been any real progress made in the implementation of Agenda 21's goals. While many grassroots efforts continue to flourish, critical changes in international and national policy remain unseen. No convention has been drafted to negotiate agricultural practices and their global implications, nor have agricultural representatives or farmers held prominent roles in the negotiation and implementation of other international environmental agreements. In fact, agriculture as a global topic has been avoided in most environmental contexts. This is in part because many resist the idea that agriculture is of international concern. In addition, at the level of international politics, agricultural issues are typically seen as "stumbling blocks" to progress on other, more important issues (Norberg-Hodge *et al.*, 2001). Yet, many globally recognized issues—biodiversity loss, deforestation, desertification, even depletion of marine fisheries—have a critical agricultural component.

A Sustainable Agriculture Amendment

In a global negotiation system that stresses universal, transferable, and codified processes, sustainable agriculture presents a conflict in theory as it resists definition, has a number of local expressions, and cannot be replicated from context to context. In addition, to fully incorporate sustainable agriculture into the global model would require a full overhaul of the way that economies are built, food is produced and distributed, and government policies are written. Again, this is due to the overriding holistic nature of the concept, which by definition requires a complete systems approach to the interplay of society, culture, environment, and economy. Therefore, the task of prescribing the means for better representation of sustainable agriculture issues is a daunting one. The approach that I have taken is moderate, meant to be a stepping-stone for later action and refinement. However, it is my opinion that the mere recognition of these issues in the text of a number of environmental conventions is a significant step in the right direction.

A convention on sustainable agriculture would create a permanent international platform to strengthen the acceptance and development of the model as well as elevate its status within the global context. In addition, the convention approach would bring the development, management, implementation, and monitoring aspects related to sustainable agriculture under one unifying body. Although this approach is advantageous on a number of fronts, in the meantime I have avoided it as the central prescription. This is not to say that a "Sustainable Agriculture Convention" is not needed, but rather that another option exists that will incorporate sustainable agriculture more expediently and effectively at the current juncture in international environmental negotiating, and that in turn may prime sustainable agriculture for greater acceptance and utilization if and when a convention comes to fruition.

The Amendment

The central prescription in this discussion is the creation of a multi-treaty amendment that will incorporate the holistic virtues of sustainable agriculture into the theoretical framework of a number of international environmental negotiations. The amendment will be available as an independent text that may be inserted into conventions already in existence as well as those yet to come (for example a water treaty, one of the "millennium goals") (Moomaw 2000). This strategy is seen as the best way for the positive implications of sustainable agriculture to be realized in the present, as the sooner sustainable agriculture is recognized in

the text of a number of agreements and treaties the sooner it will be validated and utilized. It is in essence an interdisciplinary approach to bolster the inclusion of an interdisciplinary concept.

Serving as the first multi-treaty amendment of its kind, the “Sustainable Agriculture Amendment,” (hereinafter “SAA,”) will certainly have kinks. However, the hope is that it can be viewed as a model on which to build for the future development and implementation of interdisciplinary amendments. The intent of the SAA is for it to be open and flexible, providing a positive new vein for action, but not constricting previously outlined goals and aspirations of the a given convention. The text must remain simple so that it will be applicable in a myriad of contexts and amendable, but also tight in scope to maintain many of the underlying premises key to the proper implementation of the strategy.

Based on recent trends, much of the progress being made in regards to sustainable agriculture is happening from the ground up in a variety of contexts and expressions. As most international environmental conventions support the standardized and top-down approach to treaty implementation and design, the incorporation of sustainable agriculture into a convention’s processes may be slow-going or simply nonexistent. The ultimate goal is for the very recognition of the merits of sustainable agriculture in the amendment to lead to the recognition of the merits of local and regional participation in any convention’s success. In turn, it is hoped that the amending convention will reform its procedures to have greater community participation and a more balanced process that will better support the sustainable agriculture model.

There are a number of benefits inherent in the multi-treaty amendment approach. Rather than expending the time, energy, and costs associated with the typical convention-building process and negotiation, the multitreaty approach has the advantage of relying on existing institutions of the amending conventions, for example their secretariats or financial mechanisms.

The amendment has value also in being proactive in defining sustainable agriculture. Many supporters of sustainable agriculture want to be aggressive in its promotion and implementation before the concept loses its integrity. This fear is already being realized as a number of agribusiness companies are creating sustainable agriculture departments, such as Syngenta’s “Foundation for Sustainable Agriculture,” despite representing some of the largest pesticide companies in the world (Syngenta 2004). Although many advocates are not necessarily concerned about the loose definition of sustainable agriculture in general, the promotion of a global definition in the international context is critical in order to maintain the term’s usefulness.

The mere recognition of sustainable agriculture as a relevant consideration in the specific amending convention, as well as an integral component of any long-term environmental solution, is the ultimate goal. Inclusion of sustainable agriculture may not necessarily cause an entire overhaul of a treaty’s framework from the onset, but its presence may work to preclude the adoption of further intensive, universal and standardized top-down approaches to environmental problems that may otherwise be considered.

The Coordinating Body

A coordinating body must be formed to serve as the mechanism for bringing the SAA to the secretariat and contracting parties of the convention to be amended. It is proposed that representatives from the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Environment Program (UNEP) fulfill this role via a partnership created exclusively for the systematic promotion of sustainable agriculture in the international environmental arena. Both the FAO and UNEP are well-respected neutral bases for the coordination of such an effort—characteristics which will increase the reception of the SAA.

Furthermore, the promotion of sustainable agriculture fits well into the mandates of both organizations. FAO has been instructed to pay specific attention to the consequences of the earth's natural resource base, including a specific provision to focus on sustainable agriculture (Porter *et al.* 2000). UNEP has been called on to “provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations” (UNEP 2004). Each of their roles in drafting and promoting the SAA would be an important opportunity to elevate the status of sustainable agriculture within UN activities and priorities, as well as fulfilling their own individual mandates.

The coordinating body will need to solicit at least one contracting party of each amending convention (and preferably a coalition of many nations) to present the SAA to the rest of the convening parties for immediate review. This will be necessary since the amendment process for most international environmental negotiations requires a contracting party to propose amendments. In addition, as each international treaty has its own amending process, the coordinating body will need to research and accommodate the distinct processes for each convention in a well-timed and strategic manner. Expediency is a key concern. This amendment is meant to serve as a springboard for further inclusion of sustainable agriculture—the sooner it is incorporated the better.

Basic Text

The SAA will have a standard format, but will be drafted specifically to meet the needs and objectives of the amending convention. (See model amendment, opposite.) The SAA process should be promoted as a service to the amending convention, as the coordinating body will make the role of sustainable agriculture clearer within the context of the convention and, in turn, easier to establish.

Multiple independent draft versions written independently by contracting parties may be helpful in the beginning, but only to guide the eventual proposal of the coordinating body. Ultimately, a single-draft process is recommended, in which alterations to the coordinating body's proposal can be submitted by interested contracting parties. This approach keeps the majority of the drafting responsibility within the control of the coordinating body, minimizing the chance for subjective interests with financial objectives to dominate. This strategy will also avoid the attachment of national interests to the amendment, which could potentially cause its failure.

One of the more difficult tasks in the amendment drafting process will be the definition of terms. The word “sustainable” carries a number of connotations that must be carefully

General Provisions

Purpose

- To highlight the connections between the (amending convention) and agriculture.
- To recognize, accommodate, promote and strengthen the role of sustainable agriculture as a viable and relevant solution to the objectives of the (amending convention).
- To harmonize the goals and objectives of Agenda 21 (specifically chapters 14, 26 and 32) with the existing goals and objectives of the (amending convention).
- To establish a research and development fund to be committed to the pursuit and promotion of sustainable agriculture as it relates to the (amending convention). This fund shall be a minimum of 5% of the funds currently set aside for research, technical assistance, training and development.
- To provide a global definition of sustainable agriculture.

Principles

The amendment seeks to acknowledge that food is a human right and agriculture production is a fundamental need of all nations. The dominant industrial model of agricultural production is not sustainable, especially considering rapid population growth. Whereas industrial agriculture has the capability to produce high yields, it imposes high costs on the quality of life, the environment, local knowledge, and the economies of rural communities. Great progress can be made in achieving the objectives of (the amending convention) as well as in general ecological, social and economic health by promoting the transition to sustainable agriculture

Definition

“Sustainable agriculture is an integrated system of plant and animal production practices have a site-specific application that will over the long-term:

- satisfy human food and fiber needs
- enhance environmental quality and the natural resource base upon which the agriculture economy depends
- make the most efficient use of non-renewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls
- sustain economic viability of farm operations
- enhance the quality of life for farmers and society as a whole (CRSEES, 2004).”

Further Recommendations... (Specific to each amending convention and drafted by the coordinated body).

exclusive to avoid the creation of loopholes. For example, if the utilization of sustainable agriculture is granted concessions (such as funding) then there may be claims made by those trying to free-ride. The integrity of the term must be upheld in the amendment so that the subsequent implementation of programs related to sustainable agriculture is properly managed.

As the result of this process the amendment will provide a global definition of sustainable agriculture—a task that has been avoided for some time but that is necessary to gain the credence necessary for its acceptance. The specific language of this definition will need revising by appropriate interest groups, but will read similar to the following, which is the “legal” definition of sustainable agriculture in the United States:

An integrated system of plant and animal production practices having a site-specific application that will over the long-term: satisfy human food and fiber needs, enhance environmental quality and the natural resource base upon which the agriculture economy depends, make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls, sustain economic viability of farm operations; and enhance the quality of life for farmers and society as a whole (CSREE 2004).

In addition to providing a globally recognized definition, the SAA will include language that reinforces the objectives regarding sustainable agriculture, the participation of local farmers, and the participation of local peoples as designated in the respective chapters of Agenda 21. This will be a way of reintroducing these forgotten concepts into the text of a number of international agreements, and more important, of establishing the necessary contextual links to make the objective more readily implemented.

In addition, the SAA will require a financial commitment to sustainable agriculture. The contracting parties of the amending convention will be asked to earmark a certain percentage of research, technical assistance, and training funds to be committed to research and development of the sustainable agriculture model. The proposed minimum for this contribution is five percent, a realistic figure that should not encounter much resistance as it is a minimal one, yet large enough to provide the necessary financing to begin to incorporate sustainable agriculture into the convention’s goals.

Further Recommendations

The coordinating body will carefully research the amending convention for existing references to agriculture as well as devise appropriate means for the inclusion of sustainable agriculture in other appropriate sections of the treaty. In addition to the language of the SAA, the coordinating body will draft a list of “further recommendations” that will highlight the many ways in which sustainable agriculture can be better incorporated into the amending convention. These recommendations are meant to stimulate awareness of what sustainable agriculture has to offer. They are intentionally provided as an addendum to the SAA for the contracting parties of the amending convention to utilize as they deem appropriate. Ideally, however, they will be voted into practice. In fact, the influence of the “further recommendations” section may be a sufficient stimulus to institute action towards more sustainable agricultural practices within the context, objectives, and goals of the amending convention.

Stakeholders

In addition to the coordinating body, we can expect a number of interested parties, both supportive and resistant, to get involved in this process. Supportive parties may include international NGOs, such as the International Federation of Agricultural Producers (IFAP), a worldwide body that coordinates 100 national farmers' organizations and represents 500 million family farmers. Such NGOs could play important roles in making recommendations regarding the process, design, and implementation of SAAs. Other sustainable agriculture groups, environmental groups, and indigenous groups will also be valuable resources.

The food system extends far “beyond the farm and involves the interaction of individuals and institutions with contrasting and often competing goals including farmers, researchers, input suppliers, farm workers, unions, farm advisors, processors, retailers, consumers, and policymakers” (SAREP 2004). As a result, a number of parties will potentially have conflicting input regarding the amendment. Unfortunately, there is certain to be resistance to any restructuring from large transnational corporations, especially in the chemical and petroleum businesses. As a result, it will be important to keep open communication with these groups, possibly working together to craft new technologies and products that will guide agriculture in a more sustainable direction. This contention is another reason why the proposed SAA is kept minimal in scope, so as to get its “foot in the door” without having the door slammed back.

Time Line

One of the proposed benefits of the amendment approach is its time-saving attributes. The time-line appropriated for the coordinating body must be aggressive and rigorous. The coordinating body will have six months to design the format of the coordinating body; for the budgets of FAO and UNEP to incorporate the costs needed for maintaining the coordinating body; and for staff to be appointed.

Once created, the coordinating body will work full-time to devise SAAs for adoption, complete with specific clauses (“further recommendations”) which match the needs and objectives of each amending convention. They will begin work with the Convention on Biodiversity (CBD) and the Convention to Combat Desertification (COD), as these two particular conventions are expected to be most amenable to this new amendment process. The amending process will then follow the timeline set by the amending convention, according to the pre-determined procedures. The coordinating body must accommodate this schedule, and will be asked to prepare the contracting parties who have agreed to promote the SAA to do so by the next possible review date.

After this initial phase, in which SAAs are proposed to both the CBD and COD, the coordinating body will be given time to reassess the process and make any necessary adjustments. This evaluation period will streamline and improve efforts for the next round of amending.

In general, continuing research must be conducted throughout the process, examining current international negotiations in which a SAA would be germane and successful. A

strategic plan must be drafted that incorporates goals for the promotion and implementation of a SAA within these contexts. Careful attention must also be made to the varying amendment processes of each convention to ensure that SAA are timely and well positioned for success.

Making the transition to sustainable agriculture must be seen as a process that requires many small, realistic steps. The SAA, although seemingly slight, will contribute greatly in advancing the entire model along the “sustainable agriculture continuum” (SAREP 2004).

Financial Mechanism

There will be a small financial burden associated with the processes of amending the SAA. This burden will be absorbed by whichever financing mechanism is responsible for each particular treaty being amended. Additional funds, however, will need to be made available to ensure that the aforementioned financial mechanisms function according to plan. Funds will also be needed to staff and finance the actions of the coordinating body. A percentage of these funds should come from the UN agencies themselves, with the remaining funds allocated by the Global Environmental Facility.

Selling Points of Sustainable Agriculture

There are a number of incentives inherent to the sustainable model which makes the adoption and promotion of the SAA in the international environmental negotiation context more attractive. Typical negotiation obstacles such as reaching agreement on scientific assessments, upholding national sovereignty, balancing North-South agendas, fostering issue linkage, and formulating successful implementation tactics can be generally reduced in the promotion of sustainable agriculture. It is with these “selling points” that the incorporation of sustainable agriculture via a multi-treaty amendment shall be promoted as well as why the multi-treaty approach would be so successful.

Dueling Sciences

In the definition of problems as well as the generation of solutions, the science involved in international environmental negotiations is often hotly contested as the search for a universally applicable science proves near impossible. Part of this failure results from a steadfast adherence to modern science and technology, stemming from the great desire for science to be defined as a singular, unassailable, and objective truth (Jasonoff and Long 2004). Rather than accepting that no two societies “perceive or act upon” the same environment in the same way, the standard approach to scientific assessment is based on the dangerous assumption that scientifically homogeneous solutions exist for extremely heterogeneous environmental problems (Ellen *et al.*, 2000). Such a perspective prevents developers from seeing the value in local expertise and ecosystems based approaches to agriculture, when it is precisely these traits that make sustainable agriculture so useful.

The problem often lies in how the issue is framed for the scientific analysis. The inclusion of sustainable agriculture into a number of environmental conventions allows a more liberal approach to science and scientific assessment which can in turn be adapted to each nation’s local context, to generate more solutions. Sustainable agriculture can work in concert with Western science and is not intended to replace Western assessments, but to augment them with local knowledge local about contextual conditions. As expressions of sustainable

agriculture, by definition, are most relevant within a local context, the need for each nation to legitimize and validate its scientific assessments of sustainable agriculture to the international community is reduced. By incorporating local knowledge, the SAA accommodates national goals of promoting and protecting regional concerns. However, the analytic system must remain open to questioning and alternative inputs from outside sources, in order to support fully the goals of participation and transparency.

National Sovereignty

A pivotal concern of countries when they enter into international environmental negotiations is retaining their national rights and privileges (Susskind 1994). One of the great benefits of utilizing local sustainable practices is that a country can search within its own particular context and create a holistic approach to agriculture that best meets its own specific needs. Sustainable agricultural knowledge exists as a form of local capital, reducing dependence on technological or research inputs from other nations. The inclusion of sustainable agriculture should thus be embraced as an empowering contribution of each country's history and tradition to their future development. This also will be an incentive for nations to support the SAA.

Acknowledging the Southern Agenda

Generally, the agenda of the North gets the most attention in international environmental negotiations, mostly because of the North's economic power. The needs and priorities of the South are often down-played, especially if the South asks for compensation for environmental costs inflicted during the North's path towards development. By acknowledging sustainable agriculture in a number of existing environmental treaties, some of the objectives of the South and its indigenous peoples who have previously been silenced in the international context will be legitimized. These objectives include poverty-alleviation, agricultural development, validation of local knowledge, and so forth. The inclusion of sustainable agriculture as a viable solution to a number of environmental and social problems is, in turn, a valuable means of retaining the Southern dialogue in the global negotiation context.

Linkages

One of the areas needing improvement in the international environmental negotiation process, as stressed by the Salzburg Initiative, is issue linkage. Such linkage encourages negotiation by bringing more interests to the table and providing greater room for the creation of incentives by which countries can negotiate.

The linking of sustainable agriculture to a number of international environmental negotiations already in place would reinforce the importance of agriculture as an integral part of the solution, as well as the value of local participation. These issues are clearly related, but have been taken up in separate bureaucracies and in accordance with different rules and procedures. In addition, the inclusion of sustainable agriculture into existing conventions may provide the necessary link for resistant parties to participate more fully in ratifying the convention or properly fulfilling its mandate.

Implementation, Monitoring, and Enforcement

Sustainable agriculture affords many benefits in implementation, monitoring, and enforcement. Whereas many of the typical solutions to international environmental

negotiations fail because of the difficulty of following through with the proposed solutions, the inclusion of sustainable agriculture means the inclusion of a number of self-regulating and successful practices already in place.

Practising sustainable agriculture alleviates some concerns about data collection. For example, quantitative data is scarce when examining soil. Even in the United States, with one of the most advanced and long-standing soil conservation services in place, records on soil erosion are difficult to come by. One of the central reasons for this is that the collection of such knowledge is tedious and time-consuming, and it is not entirely possible to take into account the variability in land conditions. Without a baseline measure of soil characteristics, it is difficult to assess the rate of damage, or in the case of corrective action, if any progress is being made.

To solve this problem, one could look to traditional farmers. Traditional farmers are, by definition, agriculturalists who have lived and interacted in the same region for generations—thus creating a sort of “institutional memory” about their local environment and available natural resources (Gomez *et al.* 1990). These memories have shown remarkable consistency and accuracy when compared to more Western assessments, allowing soil erosion to be assessed on the basis of relatively little data (UNESCO 2004). The emphasis of sustainable agriculture in the Convention to Combat Desertification, for example, would help to refine implementation tactics.

Many traditional farmers are experts at reading indicator species that provide “early warning signals of coming environmental or food catastrophes and meteorological changes such as global warming” (Members of the CSD Indigenous Peoples’ Caucus 2002). They react to periods of environmental non-equilibrium, or shocks, promptly, adapting their practices to the changing environmental conditions. By combining local knowledge with conventional scientific knowledge, it is possible to make “quick and dirty assessments” of the severity of environmental problems in an area in which data is lacking, but action is required (UNESCO 2004). When the assessment process can be facilitated by local actors action can be taken almost immediately.

With so many limitations to international conventions restricted by funding, sustainable agriculture could make a huge contribution to global environmental action through reduced implementation, monitoring, and enforcement costs alone.

In addition, the net benefits of sustainable agriculture are received on both ends. Not only will agricultural developers be informed about local and cost-effective approaches to sustainability, but the farmers also will learn about the importance of their actions and how they relate to the cause and consequences of the environmental issue under debate. This, in turn, will encourage the greater adoption of more sustainable practice. Until farmers understand the problem, agree that it is a problem, and are able to grasp the scope and scale of the problem, it will be difficult to attain commitment levels of any kind.

Thus, the very inclusion of an SAA within existing international environmental agreements may be the most cost-effective, implementable, and nationally acceptable means available for achieving a number of goals and objectives on a global scale. Rather than setting a lowest common denominator of environmental action, barely accommodating the needs and

resources of every contracting nation, sustainable agriculture supports a number of viable expressions through its critical attention to local contexts.

Conclusion and Application

Sustainable agriculture by its very holistic nature incorporates a number of environmental considerations into its design. As a result, it is highly applicable to a number of environmental contexts, from water to soil to forests to biodiversity. Furthermore, sustainable agriculture is directly applicable to a number of global issues and agreements beyond the environmental realm, including those focusing on trade, security and debt. In fact, in the future it is hoped that sustainable agriculture will become a regular heading within the great majority of international agreements. The argument that sustainable agriculture reaches into all sectors will be supported by this reality.

Secretary General of the International Federation of Agricultural Producers (IFAP), David King, remarked: "I believe that the agricultural sector is well placed to help solve many of the most pressing problems facing society today" (IFAP 2004). Such conviction may seem lofty, however it encompasses the fundamental and essential recognition of both farmers and food production that has been missing from global environmental discussions for so long and that may be at the very heart of the solution to a number of international environmental concerns. The present situation calls for worldwide and coordinated action if we are to continue to sustain our people, environments and economies via agricultural production. Thus, it is with utmost urgency that the discussion of sustainable agriculture be systematically incorporated into the global environmental context.

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