

INTERNATIONAL ENVIRONMENTAL LAW

SUSTAINABLE DEVELOPMENT

Evaluating a Community-Based Approach to Sustainable Agriculture

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Abstract

Sustainable development promotes the principle that the current generation must use the earth's natural resources in a manner that will preserve the natural resources for future generations. The concept of sustainable development is integral to achieving sustainable agricultural practices, with an emphasis on a community-based approach. Because the community-based approach is facilitative of different interest groups, and would take into account the various cultural, economic, social and ecological differences that lies within and amongst these communities. In essence, if the objectives of sustainable development are to be realized, collaboration on all levels, local, national and international level, will be required; with education and the development of sound technology being the focal point.

I. Introduction

The concept of sustainable development is today being touted as the answer for many of the world's problems. This includes environmental degradation, social injustice and vastly disproportionate economic development. Sustainable development, however, as a concept is very ambiguous.¹ Sustainable development requires that the stock of natural resources should be protected and enhanced so that the maximization of human welfare today does not undermine the basis of welfare for future generations.² In essence, the aim of sustainable development should be to ensure that the current generation does not exploit and deplete the current resources of the earth without preserving and protecting the natural resources for the benefit and enjoyment of

¹ Ellie Carroll, Comment, Twenty-Five Years in the Making: Why Sustainable Development has Eluded the U.N. and how Community-Driven Development Offers the Solution, 32 HOUS. J. INT'L L. 545, 545 (2010) (suggesting that the UN should turn to the many local communities of the world to implement sustainable development).

² Alhaji B.M. Marong, From Rio to Johannesburg: Reflections on the Role of International Legal Norms in Sustainable Development, 16 GEO. INT'L ENVTL. L. REV. 21, 41 (2003) (discussing the legal significance of sustainable development).

future generations. The end goal of the concept of sustainable development is thus, conservation of natural resources. This concept is explicitly and implicitly stated in many regional and multilateral treaties, and in the national legislation of countries such as England and Canada.

It is imperative that the concept of sustainable development as an approach to environmental protection requires the cooperation and effort of many players: local communities, national and international leaders, businesses, as well as many other non-governmental organizations. The transboundary effect of resource depletion requires that all players be given an opportunity to implement sustainable practices that are conducive to their particular environment if sustainable development is to be achieved. Sustainable development can and should be the organizing principle for improving quality of life and opportunity in our communities.³ Sustainable development can best be attained when efficient use is made of natural resources. Above all, at the local level a participatory approach will profoundly influence achieving the goals of sustainable development. An international approach is often fragmented and too abstract to have the impact necessary.

Due to unsustainable practices today and a growing population worldwide, the need for food security has become significantly important for every country.⁴ This problem can be remedied by implementing sustainable agricultural practices. Sustainable agricultural practices always have the goal of preserving the environment because sustainability is the foundation.⁵

³ John C. Dernbach & Scott Bernstein, Pursuing Sustainable Communities: Looking Back, Looking Forward, 35 URB. LAW. 495, 528 (2008) (advocating a national sustainable development strategy).

⁴ G8 Summit Statement on Food Security Reuters July 10, 2009, para. 4. "Food security is closely connected with economic growth and social progress as well as with political stability and peace."

⁵ William S. Eubanks II, The Sustainable Farm Bill: A Proposal for Permanent Environmental Change, 39 ENVTL. L. REP. NEWS & ANALYSIS 10493, 10507 (2009) (discussing that the Farm Bill reform should be re-centered on subsidies to scale up sustainable farming). See Carey Gillam, Agriculture, Farmland Attracting "Impact Investors," Reuters, Nov. 8, 2010, at 1, available at <http://www.reuters.com/article/idUSN0812929920101108> ("Long-term sustainability, particularly in

Agriculture must produce adequate food without increasing—and, more preferably, by decreasing—its geographical footprint on our natural resources.⁶ Thus, the best move toward sustainable agricultural practices is a community-based approach.

First, this paper will examine the concept of sustainable development, looking at several definitions. The paper then examines several different principles of sustainable development in particular, the principle of intergenerational equity, the principle of common but differentiated responsibility, the precautionary principle, the principle of public participation and the principle of good governance. The paper then proceeds to analyze different approaches to sustainable development, primarily focusing on the international and national approach and the community-based approach, with a look at state sovereignty as an impediment to achieving sustainable development. Then the paper will examine the concept and application of sustainable agriculture, within the context of community-based farming. Finally, the paper will look at several approaches to achieving sustainable agricultural practices and make recommendations that the best method of accomplishing sustainable agricultural practices, is through education and sound technology. In general, this paper advocates for a community-based implementation of sustainable agriculture practices because a widespread implementation of sustainable agricultural practices is currently not feasible.

agriculture, requires a deep collaboration and symbiosis between investor activities and the communities in which they operate.”).

⁶ Drew L. Kershen, Sustainable Intensive Agriculture: High Technology and Environmental Benefits, 16-SPG KAN. J.L. & PUB. POL’Y 424, 424-425 (2007) (suggesting that agriculture must become agronomically sophisticated, environmentally protective, and economically sound); *see generally* Les Firbanks, Sowing the Seeds of Farming’s Future, BBC News, Nov. 13, 2007, at 1, available at <http://news.bbc.co.uk/2/hi/science/nature/7092407.stm> (“Societies will need a new vision of sustainable agriculture that addresses production, environmental and social needs together.”).

II. An Overview of Sustainable Development

There are many different definitions and interpretations of sustainable development as the concept is being embraced by many different government leaders, individuals, non-governmental organizations and intergovernmental organizations. The Brundtland Commission, however, also known as the World Commission on Environment and Development in 1987 highlighted the concept of sustainable development in its report *Our Common Future*.⁷ The Commission defined sustainable development as follows: “development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.”⁸ Another widely acceptable definition provides that “sustainable development is the management and conservation of the natural resource base and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations.”⁹ Such sustainable development, in the agriculture sector, conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable.¹⁰

Fundamentally, sustainable development involves using the current natural resources in a sustainable manner so that the future generations can enjoy the benefits of the same natural resources now available to the current generation. Nico Schrijver notes, “the present generation should not confront future generations with irreparable damage to the environment, to their

⁷ U.N. Report of the World Commission on Environment and Development, *Our Common Future*, paras. 1-3, U.N. Doc. A/RES/42/187 (1987) available at <http://www.un.org/documents/ga/res/42/ares42-187.htm> [hereinafter Brundtland Report] (“Concerned about the accelerating deterioration of the human environment and natural resources and the consequences of that deterioration for economic and social development and believing that sustainable development should become a central principle).

⁸ Brundtland Report, *supra* note 7, at para. 2. This definition can be regarded as the most widely accepted definition of sustainable development.

⁹ What is SARD? available at <http://www.fao.org/wssd/sard/index-en.htm> (last visited Oct. 16, 2010) (This definition was adopted by FAO after the World Summit on Sustainable Development in 1989).

¹⁰ *Id.*

health or to the economy which would considerably compromise their capacity for their own development.”¹¹

Sustainable development has more recently become a general aim of national and international action;¹² as the concept has been accepted and endorsed by the world community.¹³ Sustainable development as a concept can be found today in many different multilateral treaties, regional treaties, including the founding Charter of the World Trade Organization (WTO), in European Law (EU) law, United Nations General Assembly and Security Council resolutions, in other legal documents of other international organizations¹⁴ and also in national legislations of many countries, for example England and Canada. Despite the fact, that the concept of sustainable development have been criticized, by many as being contradictory and ambiguous. As stated by Christina Voigt, absolute precision, as to the meaning and scope of sustainable development may not be achievable.¹⁵ This does not suggest that sustainable development is not a practical and germane concept. The scope of sustainable development remains controversial, yet flexible, as many social, economic and environmental issues are now being brought together under the umbrella of sustainable development.

Given the flexibility of the concept of sustainable development in addressing multiple issues faced by the actors in the international arena, the need for environmental protection can best be addressed utilizing this approach. As said by John Dernbach, “sustainable development is a way of setting and achieving environmental, social, and economic goals at the same time, using

¹¹ Nico Schrijver, THE EVOLUTION OF SUSTAINABLE DEVELOPMENT IN INTERNATIONAL LAW: INCEPTION, MEANING AND STATUS 23-24 (2008).

¹² Alexandre Kiss & Dinah Shelton, INTERNATIONAL ENVIRONMENTAL LAW 248 (2d ed. 2000).

¹³ Christina Voigt, SUSTAINABLE DEVELOPMENT AS A PRINCIPLE OF INTERNATIONAL LAW: RESOLVING CONFLICTS BETWEEN CLIMATE MEASURES AND WTO LAW 27 (2009).

¹⁴ Schrijver, supra note 11, at 24.

¹⁵ Voigt, supra note 13, at 27.

all appropriate legal and policy tools”.¹⁶ Outside the framework of sustainable development, the objectives of environmental protection, economic development and social justice often pull in different directions.¹⁷ This necessitates the need for a complementary approach in achieving sustainable development.

Achieving environmental protection will likely not be an easy task, but it can be achieved if there is an integration of economic development with environmental protection. In other words, trade-offs between the different sectors within society and among social, economic, cultural and ecological objectives will be required. Environmental conservation should be treated as an integral part of the planning and implementation of activities at all stages and at all levels, giving full and equal consideration to the varying environmental, economic, social, and cultural factors.¹⁸ Sustainable development, according to Kiss and Shelton, integrates traditional economic development and social well-being with environmental protection and restoration, and it makes particular sense at the community level because the relationships among these objectives are most obvious there.¹⁹ In essence, the concept of sustainable development will require a collaborative and cooperative merging of environmental protection with economic development and cultural factors.

Sustainable development, therefore, which addresses the need to balance and coordinate widely divergent collective interests, while protecting the regenerative capacity of the biosphere, has been accepted as ‘the way forward for a healthy planet,’²⁰ and “may very well be the only

¹⁶ Dernbach, *supra* note 3, at 528.

¹⁷ Voigt, *supra* note 13, at 4.

¹⁸ Kiss, *supra* note 12, at 248-49.

¹⁹ Dernbach, *supra* note 3, at 528.

²⁰ Voigt, *supra* note 13 at 4-5.

way forward.”²¹ There are no doubt gaps between the theoretical explications of sustainable development and the practical applications, but if nothing is done now, the environment will only further deteriorate, while we engage in a “sit-and-wait” approach. Implicit in this, States are sovereign nations and as result, there is only so much that treaty making can accomplish without a higher authority to ensure that States not only abide by these treaties, which they themselves have sought to put in place, in an effort to promote sustainable development.

A. A Snap –Shot of Some Principles Guiding Sustainable Development

There are several principles that guide the concept of sustainable development and its implementation and application to our current legal frameworks. According to Phillippe Sands, principles provide the legal and philosophical basis for the transition to sustainable development.²² These principles espouse the protection of all aspects of the environment and are applicable to all states. Some principles are based upon or reflect customary law; others represent new or emerging international legal concepts; and yet others are clearly only intended to be inspirational in effect, or to comprise statements reflecting future intent.²³ Even though, some principles remain largely theoretical and aspirational, principles are a useful guidance for the application of sustainable development.

1. The Principle of Intergenerational Equity

The preservation of natural resources for the benefit of the current and future generations can be regarded as the driving force behind the concept of sustainable development. Intergenerational equity requires each generation to use and develop its natural and cultural heritage in such a manner that it can be passed on to future generations in no worse condition that it was

²¹ See *id.* at 5.

²² Phillippe Sands, *International Law in the Field of Sustainable Development: Emerging Legal Principles*, in *SUSTAINABLE DEVELOPMENT AND INTERNATIONAL LAW* 56 (Winfried Lang ed., 1994).

²³ *Id.* at 57.

received.²⁴ Central to this idea is the need to conserve options for the future use of resources, including their quality, and that of the natural environment.²⁵

2. The Principle of Common but Differentiated Responsibilities

The principle of common but differentiated responsibility developed out of the principle of equity²⁶ in general international law, together with the recognition that the special needs of developing countries must be taken into account in the development, application and interpretation of rules of international environmental law.²⁷ In essence, this principle recognizes that there are economic and social inequities amongst states, which must be taken into consideration when promulgating global environmental agreements. This principle recognizes a “global partnership” among states but assigns certain accountability to developed countries for pressures their societies have placed on the global environment and for the technological and financial resources which they command.²⁸ This principle encourages developed countries to provide technical and financial assistance, where appropriate to developing countries.

²⁴ INTERNATIONAL LAW AND SUSTAINABLE DEVELOPMENT: PAST ACHIEVEMENTS AND FUTURE CHALLENGES 12 (Alan Bole & David Freestone eds. 1999) [hereinafter International Law and Sustainable Development].

²⁵ Id.

²⁶ See Schrijver, *supra* note 11, at 175-76 The present generation may not squander natural resources and cause damage to the environment in such a way that the future generations are no longer able to meet their needs or fulfill their aspirations. (quoting Edith Brown-Weiss, In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity “as members of the present generation, we hold the earth in trust for future generations”, while “at the same time we are beneficiaries entitled to use it”); see also Marie-Claire Cordonier Segger, The Role of International Forums in the Advancement of Sustainable Development, 10 SUSTAINABLE DEV. L. & POL’Y 4, 11 (2009) (quoting Edith Brown-Weiss, (“Equity refers to both intergenerational equity (a right of future generations to enjoy a fair level of the common patrimony) and intra-generational equity (a right of all peoples within the current generation of fair access to the Earth’s natural resources”). Id. at 17-26.

²⁷ Sands, *supra* note 22, at 60 (“The principle of equity implies that the use by any one state must take account of the needs of other states.”).

²⁸ INTERNATIONAL, REGIONAL AND NATIONAL ENVIRONMENTAL LAW 26 (Fred L. Morrison & Rudiger Wolfrum eds., 2000) [hereinafter REGIONAL LAW].

3. The Precautionary Principle

The precautionary principle provides that states should adopt and implement environmental standards, even in light of scientific uncertainty. In essence, states should not only treat the environment and natural resources in their territory with due care, but should prevent environmental harm even in circumstances of scientific uncertainty.²⁹ The core of the principle is reflected in Principle 15 of the Rio Declaration³⁰, which provides, *inter alia*, that “Where there are threats of serious or irreversible damage; lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”³¹ The precautionary principle in international environmental law reflects the necessity of making environment-related decisions in the face of scientific uncertainty about the potential future harm of a particular activity.³² This suggests that before plans that may have an impact on the environment are put into place, the risks of the environmental damage must be contemplated.

4. The Principle of Public Participation

This principle reflects support for the idea that citizens are entitled to participate in relevant decision-making: they should have access to information, the opportunity to participate in decision-making processes, and effective access to judicial and administrative proceedings,

²⁹ Schrijver, *supra* note 11, at 184.

³⁰ U.N. Conference on Environment and Development, Rio Declaration on Environment and Development, princ. 15, U.N. Doc. A/CONF.151/26/Vol.1 (1992) available at <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm> [hereinafter Rio Declaration] (The Rio Declaration is the result of United Nations conference held in Rio de Janeiro in 1992, which adopted by consensus of over 175 countries, twenty seven principles that would guide the implementation of sustainable development. The Rio Declaration is a powerful, but not a legally binding document); See generally Mary Pat Williams Silveira, *International Legal Instruments and Sustainable Development: Principles, Requirements, and Restructuring*, 31 WILLAMETTE L. REV. 239, 239 (1995) (asserting that the concept of sustainable development represents a paradigmatic shift, but it is not the evolution of environmental law).

³¹ RIO DECLARATION, *supra* note 30, at princ. 15.

³² REGIONAL LAW, *supra* note 28, at 14. See Marong, *supra* note 2, at 64 (“It is an anticipatory, prudential approach to decision-making in the interests of sustainable development.”).

including remedy and redress (Rio Declaration, Principle 10).³³ Indeed, Principle 10 in the Rio Declaration states that: “environmental issues are best handled with the participation of all concerned citizens, at the relevant level; at the national level”³⁴ The principle of public participation is instrumental for the effective and efficient development of environmental law; not just globally, but regionally and more so nationally. People are more willing to participate and adhere to regulations, if they have a say in the development of their environmental future.

5. The Principle of Good Governance

Good governance is now widely viewed as an essential element of the concept of sustainable development and its implementation.³⁵ A description of good governance can be found in the Cotonou Partnership Agreement: “good governance is the transparent accountable management of human, natural, economic and financial resources for the purpose of equitable and sustainable development.”³⁶ The process by which rules emerge, how proposed rules become norms and norms become law, is highly important to the legitimacy of law, and legitimacy in turn affects compliance.³⁷ Participation may take place through elections, grass roots action, lobbying, public speaking, hearings, and other forms of governance whereby various interest and communities participate in shaping the laws and decisions that affect them.³⁸ Good governance is particularly relevant in a democratic system of government.

³³ Sands, *supra* note 22, at 64.

³⁴ Schrijver, *supra* note 11, at 198.

³⁵ Schrijver, *supra* note 11, at 201; see also SUSTAINABLE DEVELOPMENT AND GOOD GOVERNANCE (K. Ginther et al. eds., 1995).

³⁶ See generally The Partnership between the Members of the African, Caribbean and Pacific Group of States and the European Community and its Member States, Art. 9 (June 23, 2000) available at <http://www.acpsec.org/en/conventions/cotonou/accord1.htm>; see also Schrijver, *supra* note 11, at 202.

³⁷ Kiss, *supra* note 12, at 151.

³⁸ See *id.*

III. Different Approaches to Sustainable Development

A. International and National Approach

The authority to regulate generally, including the authority to regulate to achieve economic, ecological, and social sustainability, originates in the inherent power of government.³⁹ This power includes the authority to protect the public's health, safety and welfare.⁴⁰ States, when acting as a member of the international community, have authority to enter into binding bilateral and multilateral agreements for the preservation and protection of the environment. Based on these bilateral and multilateral treaties, states, in turn enact national legislation. Even so, with the prevailing doctrine of sovereignty, states are not obligated to assume any responsibility or to take any action unless they explicitly agree to do so.⁴¹ Moreover, the process of treaty ratification and implementation is a slow and arduous task.

1. The Effect of State Sovereignty on Sustainable Development

State sovereignty is a traditional concept of international law, which provides that each state have a right to conduct its relations and activities without interference from other states, (particularly within the exclusive jurisdiction of that state).⁴² In the traditional international legal order, states are sovereign and equal, imbued with equal rights and duties as members of the international community, notwithstanding differences of an economic, social, or political

³⁹ Jerrold A. Long, Sustainability Starts Locally: Untying the Hands of Local Governments to Create Sustainable Communities, 10 WYO. L. REV. 1, 15 (2010) (arguing that local government have a significant role to play in attaining social, economic and ecological sustainability).

⁴⁰ Id.

⁴¹ Ved P. Nanda, INTERNATIONAL ENVIRONMENTAL LAW & POLICY 7 (1995).

⁴² ENCYCLOPAEDIC DICTIONARY OF INTERNATIONAL LAW 381-2 (Clive Parry et al. eds., 1986) States are the primary subjects at international law. “[A] subject of the law is an entity capable of possessing international rights and duties and having the capacity to maintain its rights by bringing international claims.” In addition, to States, international organizations and a large number of other entities enjoy a certain limited status in international law.” (quoting Brownlie, PRINCIPLES OF INTERNATIONAL LAW (3d ed.)).

nature.⁴³ The concept of sovereignty, however, raises tremendous problems in the international relations between nation-states. Since sovereignty makes the task of generating international agreement extremely difficult.⁴⁴ And environmental issues, which combine scientific uncertainty with politics, citizen and industry activism with economics, are probably the most complicated and difficult to resolve.⁴⁵ As Edith Brown-Weiss explains, “[s]tates have traditionally asserted the right to pollute at self-determined levels.”⁴⁶

Many international relations experts believe that countries will inevitably act in their own self-interest, and that enlightened self-interest encompasses awareness that every nation is part of the web of international economic and political relationships.⁴⁷ Despite few legal incentives to comply, perhaps nations accept and adhere to treaty requirements much of the time in a shared belief in the foregoing principles and a shared sense of responsibility for “the common good.”⁴⁸ The reality is that the fierce protection of national sovereignty is unlikely to erode.⁴⁹ Nevertheless, environmental law treaties require “teeth,” to enhance their effectiveness. Time is against us and so effective enforcement and monitoring approaches needs to be implemented in all fairness to the future generations.

⁴³ Regina S. Axelrod et al., *THE GLOBAL ENVIRONMENT: INSTITUTIONS, LAW, AND POLICY* 45 (2d ed., 2005). See James R. Fox, *Dictionary of International and Comparative Law* 410 (1992) (“Sovereignty is the ability of a state to act without external controls on the conduct of its affairs.”).

⁴⁴ Lawrence E. Susskind, *ENVIRONMENTAL DIPLOMACY: NEGOTIATING MORE EFFECTIVE GLOBAL AGREEMENTS* 6 (1994). See Fox, *supra* note 43, at 410 (“This could be due to the principle of sovereignty over natural resources, a principle adopted by the United Nation of General Assembly that “people and nations [but mostly nations] have permanent sovereignty over their natural resources.”).

⁴⁵ Susskind, *supra* note 44, at 6; see also Nanda, *supra* note 41, at 6 (“Past trends have shown that it is exceedingly difficult to establish effective substantive regimes or procedures for global environmental protection by relying solely on the traditional notion of state sovereignty.”)

⁴⁶ See Nanda, at 1 (quoting E.R. Weiss, *International Environmental Law: Contemporary Issues and the Emergence of a New World Order*, 81 *GEORGETOWN L.J.* 675, 702 (1993)).

⁴⁷ Susskind, *supra* note 44, at 107.

⁴⁸ See *id.* at 110.

⁴⁹ *Id.* at 109.

B. Community-Based Approach

In addition, to the national and international approach to environmental protection and conservation, a community-based approach to obtaining sustainable development, should be considered and encouraged. Because empowering local people by giving them decision making authority assists in the preservation of globally important resources; as local communities depend on the resources and land on which they live.⁵⁰ There are four characteristics of local communities that lend themselves to attaining international environment goals: (1) a long term knowledge of the surrounding ecosystems; (2) traditional agricultural and other practices that foster the productivity and renewability of resources; (3) community organization that regulates access to resources in a sustainable manner; and (4) community values that emphasize permanency in a given area, respect for that area, and responsibility to future generations.⁵¹ Basically, a community-based approach to sustainable development would incorporate the ideas and purposes and goals that are unique to each community.

Moreover, communities and local groups provide the most accessible channels for people to express their concerns and take action to create culturally-appropriate sustainable societies.⁵² Environmental objectives can be achieved if policy makers consider the social and cultural context of the communities to which they apply. In other words, “attaining sustainable communities (with an emphasis on the plural) will require allowing each community to identify its own pathway toward sustainability.”⁵³ For these local communities, resource access and

⁵⁰ Mara Kimmel Hoyt, Note, *Breaking the Trade Barrier: Common Property Solutions to Tropical Deforestation*, 5 MINN. J. GLOBAL TRADE 195, 212 (1996) (arguing that combating deforestation requires cooperation between the international arena, national government and local communities).

⁵¹ Hoyt, *supra* note 50, at 212.

⁵² Jeremy Carew-Reid et al., *STRATEGIES FOR NATIONAL SUSTAINABLE DEVELOPMENT: A HANDBOOK FOR THEIR PLANNING AND IMPLEMENTATION* 21(1994).

⁵³ Long, *supra* note 39, at 4.

security is particularly crucial. Hence, a community-based approach is pivotal in attaining sustainable development.

Achieving sustainable communities requires the commitment of national governments; -- sustainable communities cannot be achieved by local government alone.⁵⁴ More broadly, it requires active participation and involvement of businesses, non-governmental organizations, and private citizens.⁵⁵ For instance, the United Kingdom has taken a step forward in recognizing these sustainable efforts by passing the Sustainable Communities Act, which connects local councils with the Secretary of State, thereby increasing the council's accessibility to national resources.⁵⁶ Under this law, the Secretary of State has a duty to assist local communities to implement sustainable development programs chosen by the local population.⁵⁷ In other words, if communities have an active role in the decision-making process, they will likely implement sustainable strategies that are valuable to their particular communities.

IV. Sustainable Development in Context: Can Sustainable Agriculture be Achieved?

Historically, the United States food system has been one of abundance.⁵⁸ However, degradation of the environment, climate change, dependence on foreign oil and food imports, and increased demand due to population growth all threaten our food supply.⁵⁹ Environmental threats stemming from climate change and the depletion and degradation of natural resources

⁵⁴ Dernbach, *supra* note 3, at 519 (“The journey toward sustainable communities requires local governments to work with other local governments in a region, and requires supportive state and national policies.”).

⁵⁵ See *id.*

⁵⁶ Carroll, *supra* note 1, at 580.

⁵⁷ See *id.*

⁵⁸ Kathryn A. Peters, *Creating a Sustainable Urban Agriculture Revolution*, 25 J. ENVTL. L. & LITIG. 203, 204 (2010).

⁵⁹ Peters, *supra* note 58, at 204.

will increasingly impact the plant's food production system.⁶⁰ Imperative for many nation-states is the need for food security, which in recent times is strongly correlated to national security.

An adequate food supply is essential for the survival of the human race.⁶¹ "Food security is closely connected with economic growth and social progress as well as with political stability and peace."⁶² In face of environmental, economic, and social equity challenges, it is crucial that the government, at federal, state, and local levels, establish policies that promote sustainable agriculture to ensure access to an adequate food supply produced with minimal impact on the environment.⁶³ Establishing a sustainable agricultural system would reduce the environmental degradation that is caused by modern agricultural practices, and reduce socioeconomic disparities.⁶⁴ Agriculture has a special and important place in society and helps to sustain rural life and land.⁶⁵ Besides, no nation-state wants to face food shortages and, not at the expense of the environment.

What is sustainable agriculture? Sustainable agriculture was addressed by Congress in the 1990 Farm Bill.⁶⁶ Under that law, "the term sustainable agriculture means an integrated system of plant and animal production practices having a site-specific application that will, over the long term:

⁶⁰ See *id.* at 205.

⁶¹ *Id.* at 204.

⁶² Text-G8 Summit Statement on Food Security, Reuters, Jul. 10, 2009, para. 4, available at <http://www.reuters.com/article/idUSLA521526.CH.2400> (last visited Nov. 17, 2010).

⁶³ Peters, *supra* note 58, at 205.

⁶⁴ See *id.* at 206.

⁶⁵ U.N. Econ. & Soc. Council [ECOSOC], Division on Sustainable Development: Agriculture, available at http://www.un.org/esa/dsd/susdevtopics/sdt_agriculture.shtml (last visited Oct. 16, 2010); see <http://www.reuters.com/article/idUSLA521526.CH.2400> ("The food security agenda should focus on agriculture and rural development by promoting sustainable production and rural economic growth.").

⁶⁶ Sustainable Agriculture: Information Access Tools (Mary V. Gold, compiler) available at <http://www.nal.usda.gov/afsic/pubs/agnic/susag.shtml> [hereinafter USDA] (last visited Oct. 16, 2010).

(1) satisfy human food and fiber needs; (2) enhance environmental quality and the natural resource base upon which the agricultural economy depends; (3) make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; (4) sustain the economic viability of farm operations; and (5) enhance the quality of life for farmers and society as a whole.”⁶⁷

According to the Kerr Center, sustainable agriculture is in large part, a wedding of ecology and agriculture.⁶⁸ It proposes that a farm must be not only economically, but also ecologically healthy if it is to be viable over the long term.⁶⁹ It also proposes that farmers and farm workers should be afforded a good quality of life and be treated fairly.⁷⁰ A sustainable agriculture will yield healthy rural communities and towns, which are key to the overall health of our nation.”⁷¹

There is a trend that sustainable agriculture may be the way forward for the world, in general. The United States is no exception to this belief. Federal legislation and programs in the United States are beginning to promote and support sustainable agriculture. For instance, the Secretary of Agriculture has developed the Sustainable Agriculture and Education (SARE) program.⁷² The SARE program works to advance “farming systems that are more profitable,

⁶⁷ USDA, *supra* note 66, at 1.

⁶⁸ The Kerr Center for Sustainable Agriculture, What is Sustainable Agriculture? available at <http://www.kerrcenter.com/sustainable.htm> [hereinafter the Kerr Center] (last visited Oct. 16, 2010).

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ *Id.*

⁷² Christopher B. Connard, Sustaining Agriculture: An Examination of Current Legislation Promoting Sustainable Agriculture as an Alternative to Conventional Farming Practices, 13 PENN ST. ENVTL. L. REV. 125, 138 (2004) (stating that state and federal legislation should develop methods to promote sustainable agriculture). See Sustainable Agriculture Research and Education, available at <http://www.sare.org/> (working to promote sustainable agriculture in the U.S.); see also Alex Kirby, UK Orchards go Pear-Shaped, BBC News, Jan. 25, 1999, at 1, available at http://news.bbc.co.uk/2/hi/uk_news/262225.stm (“In the United Kingdom, there is a group called Sustainable Agriculture, Food and Environment working for sustainable farming in the U. K.”).

environmentally sound and good for communities through an innovative grants program.”⁷³ The program aims to increase knowledge about economically viable, environmentally sound and socially responsible farming practices, with an emphasis on research and education.⁷⁴ However, “the idea of agricultural sustainability – stewarding the food production resource base for use of future generations – is not a new phenomenon.”⁷⁵

V. Environmental Sustainability and Agriculture

How did we get to the concept of sustainable agriculture? Today, agriculture is regarded as the single largest contributor to the water pollution problem in the United States.⁷⁶ Each year, billions of tons of soil carrying pesticides, manure, and other chemicals erode from agricultural land and between twenty-five and forty percent of this soil is likely to reach the nation’s waterways each year.⁷⁷ According to one theory, agricultural degradation of the environment extends beyond water pollution into habitat loss and degradation, air pollution, and soil erosion.⁷⁸ Environmental effects of agriculture also include depletion of soil nutrients and consumption of finite fuels.⁷⁹ As population increases and the demand for agricultural produce also increases this will have a negative impact on an agricultural system that already depletes natural resources. Increasingly, society is recognizing the adverse effects of conventional agricultural methods on the environment⁸⁰ and, thus, calling for sustainable agricultural practices.

⁷³ See generally What is SARE? Available at http://www.sare.org/about/what_is_sare.htm (last visited Oct. 16, 2010).

⁷⁴ Id.

⁷⁵ USDA, *supra* note 66, at 1.

⁷⁶ Connard, *supra* note 72, at 125.

⁷⁷ Id.

⁷⁸ Id.

⁷⁹ Peters, *supra* note 72, at 218.

⁸⁰ Connard, *supra* note 72, at 126.

Where do we go from here? Sustainable agriculture has emerged as a solution, and is primarily concerned with lessening the impact of farming on the environment while maintaining or increasing the profitability of farming.⁸¹ As Kathryn Peters, noted, to accomplish this goal, we must find innovative ways to reduce our consumption of resources and replenish the resources we do consume.⁸² Peters further added that we must protect biodiversity and ecosystems, as well as our land, air, and water resources by reducing greenhouse gas emissions, carbon footprints, air and water pollution, and soil contamination.⁸³ To accomplish this, major adjustments are needed in agricultural, environmental and macroeconomic policy, at both national and international levels, in developed as well as developing countries, to create the conditions for sustainable agriculture and rural development (SARD).⁸⁴ Agricultural policy changes however, are a prerequisite for sustainable practices within the industry.

Agriculture, and in particular, sustainable agriculture is essential to every society, in maintaining not only a healthy work force, but also a healthy planet. Sustainable development is possible in the agricultural sector if an emphasis is placed on “grow locally, eat locally.”⁸⁵ Currently, the emphasis is on industrial farming, which is a major contributor to environmental degradation and, thus, requires a shift to more sustainable community-based approach to

⁸¹ Connard, *supra* note 72, at 126.

⁸² Peters, *supra* note 58, at 217.

⁸³ *Id.*; Anders Berntell, Food Production Should not Degrade Water Supplies, BBC News, Nov. 27, 2004, at 1, available at <http://news.bbc.co.uk/2/hi/science/nature/4038189.stm> (“nutrition and environmental sustainability require “triple win” strategies - the balancing of economic, social and environmental objectives.”).

⁸⁴ ECOSOC, *supra* note 65, at 1.

⁸⁵ Brad Dorfman, Wal-Mart to Boost Buying from Small and Local Farms, Reuters, Oct. 14, 2010, available at <http://www.reuters.com/article/idUSN1411516220101014?pageNumber=1> (“Wal-Mart Stores Inc. is planning to double the sales of fresh produce from local farms, with plans to sell more than \$1 billion each year in food from 1 million small and medium-sized farms by the end of 2015. That would help increase income for farmers, and reduce the use of fuel to transport food over long distances. Wal-Mart joins a growing list of corporate and charitable organizations lending support to sustainable agriculture programs and small and local farmers.”).

agriculture. This however, will require education and training initiatives, as well as the introduction of more earth friendly technology for food production.

VI. Recommendations

Education and technology are two effective means of achieving sustainable development, and in particular sustainable agriculture, with an emphasis on protecting and preserving the environment for future generations. An educated mass, equipped with environmentally sound technology, will be more motivated to participate in environmental regulation and conservation, as well as in holding government accountable.

A. Education

Education is the main driving force of any society; and environmental protection and conservation is no exception. Ellie Carroll sates that “the need to educate the public cannot be emphasized enough if global sustainability is to be achieved.”⁸⁶ Public participation through education encourages sustainable practices. If there is no educational element in sustainable development then the current generation will not be able to lead sustainable lives and future generations will suffer the effects of environmental inequities. According to Agenda 21,⁸⁷ education is critical for promoting sustainable development and strengthening the capacity of the people to address environment and development issues.⁸⁸ Education should start with those closest to the natural resources; empowering those citizens to lead sustainable lifestyles and in

⁸⁶ Carroll, *supra* note 1, at 560.

⁸⁷ U.N. Conference on Environment and Development, Agenda 21, U.N. Doc. A/CONF. 151/PC/100.1 (1993) [hereinafter AGENDA 21]. Agenda 21 is a declaration, and not a legally binding instrument. See also John C. Dernbach, *Sustainable Development as Framework for National Governance*, 46 CASE. W. RES. L. REV. 1. 87 (Agenda 21 is one of the only instruments that make any concerted effort to integrate environment and development. Yet these instruments are simply declarations, because parties to such agreements are not legally bound to follow them).

⁸⁸ AGENDA 21 Promoting Education, Public Awareness and Training, *supra* note 86, Sec. IV, ch.36.

return they will be able to demand change from their leaders who represent them and the businesses who serve them.

Education is important for two main reasons. First, an educated community has a stake in the truly sustainable use of renewable sources other than the monetary return on its investment.⁸⁹ Second, the local community must be fully supported by world and national leaders in the implementation of its sustainability plan.⁹⁰ This would require the education of world leaders on the need to involve local communities in sustainable development efforts and the need to provide monetary support.⁹¹ People will adopt attitudes and practices more conducive to sustainable development when they are persuaded that it is right and necessary, when societies provide incentives.⁹² Essentially, there is a need for formal and informal education and training that promote values and a support a sustainable way of life, while discouraging behavior that are incompatible with sustainable development.⁹³

A case study of the successful use of sustainability, education and social capital through community-driven development is found in Nigeria and its program with the World Bank.⁹⁴ Through the World Bank's Local Empowerment and Environmental Management Project (LEEMP), communities are educated first-hand about the implementation of sustainability in their area.⁹⁵ Because the individuals in the communities are not only directing, but are directly affected by, their own developmental decisions, the people of the community are more

⁸⁹ Carroll, *supra* note 1, at 560.

⁹⁰ See *id.*

⁹¹ *Id.*

⁹² Carew-Reid, *supra* note 52, at 19. See generally Stan Wood, Food for all? Policies, Investments, Incentives and GM Crops, BBC News, Nov. 27, 2004, available at <http://news.bbc.co.uk/2/hi/science/nature/4038189.stm> (“In developing countries, there are often technologies available to improve productivity, but farmers have few incentives to adopt them.”).

⁹³ Carew-Reid, *supra* note 52, at 19.

⁹⁴ Carroll, *supra* note 1, at 574

⁹⁵ See *id.*

concerned with the security of the resources for the future.⁹⁶ This success is not unique to one community --- nine African states, ninety-six local government areas, and 1,300 communities have seen results from this program.⁹⁷ Other communities could adapt some of the strategies from the LEEMP program, with leeway for ecological, social and economic disparities.

Environmental education should be broad enough to encompass youths, particularly those in public schools. Public education is important not only to build a great sense of personal responsibility, but also to conduct and enhance the kind of public understanding of, and debate about, sustainable development in a democratic society.⁹⁸ “Sustainable development . . . must be part of the state-mandated curriculum, taught to children in public school.”⁹⁹ Curitiba, Brazil serves as a model for promoting sustainable communities through education and has been recognized as one of the world’s leading cities in sustainable development.¹⁰⁰ The city has focused on developing a system of environmental education that instills a sense of pride in the citizens.¹⁰¹ Environmental education, which is a basic part of the syllabus in primary schools, is essential to many of Curitiba’s programs.¹⁰² Other best practices used in Curitiba’s program are, the development of a world premier transportation system, economic programs to keep its citizens employed, and low-income housing,¹⁰³ which may explain the success of the program.

⁹⁶ Id.

⁹⁷ Id.

⁹⁸ John C. Dernbach, “Learning Sustainability”: Toward a National Sustainable Development Strategy, 10 *BUFF. ENV’T L. L.J.* 69, 84 (2001) (stating that effective national governance is an essential requirement for sustainable development).

⁹⁹ Carroll, *supra* note 1, at 560.

¹⁰⁰ Patricia M. Dechristopher, Note, Flexibility, Efficiency, Integration: Local Lessons in Sustainable Development, 16 *COLO. J. INT’L ENVTL. L. POL’Y* 157, 159 (2005) (noting that sustainable urban development must involve the local people and preserve the local culture).

¹⁰¹ Id.

¹⁰² Id. at 167.

¹⁰³ Id. at 159 (“The economic programs include the development and regulation of the city’s own industrial complex, a food for garbage program, and a transportation program, that turned the city’s central street into a pedestrian mall and redesigned the entire traffic flow, so as to keep cars out of the

B. Technology Development and Sharing

Technology is considered to be both the root cause of much environmental degradation, and a potential remedy.¹⁰⁴ It is also a formidable engine of economic development. Consequently, access to environmentally sound technologies becomes a critical part of any strategy for sustainable development. Though, in the environmental arena, there is a lack of scientific information and an inadequate understanding of ecosystem functions,¹⁰⁵ the development of sound environmentally technology can possibly halt some of the damage to the ecosystem. Technologies which promote sustainable agricultural practices include an integrated plant nutrient system - which use recycled animal and vegetable waste and other techniques to cut down on fertilizer use, and integrated pest management - using pest-resistant crop varieties and natural pest control methods as well as pesticides.¹⁰⁶ No-till/conservation agriculture, improved water use efficiency and irrigation technologies can also help.¹⁰⁷ Other promising techniques include fertilizer methods that reduce application levels and costs, diverse crop-variety regimes, and hybrid approaches using agrichemical treatment and biological controls have also proved very successful.¹⁰⁸

downtown area and control growth throughout the city. There is also a low-income housing project that provides accessible mortgage to its poor residents and requires that each plot of land includes two trees for the yard, one of ornamental and one for fruit-bearing.”)

¹⁰⁴ Mary Pat Williams Silveira, *THE RIO PROCESS: MARRIAGE OF ENVIRONMENT AND DEVELOPMENT IN SUSTAINABLE DEVELOPMENT AND INTERNATIONAL LAW* 10 (Winfried Lang ed. 1994).

¹⁰⁵ Carew-Reid, *supra* note 52, at 19.

¹⁰⁶ Josef Schmidhuber, Food for all? Sustainable Practices and the Right Policies, BBC News, Nov. 27, 2004, available at <http://news.bbc.co.uk/2/hi/science/nature/4038189.stm>.

¹⁰⁷ *Id.*

¹⁰⁸ David E. Adelman & John H. Barton, Environmental Regulation for Agriculture: Towards A Framework to Promote Sustainable Intensive Agriculture, 21 *STAN. ENVTL. L.J.* 3, 33, (2002) (recommending that researchers develop appropriate technologies and that governments should consider economic incentives to enhance long-term agricultural sustainability).

Key policy measures that include a continuous commitment to agricultural research, with a new focus on marginal areas and the needs of the poor, should also be encouraged.¹⁰⁹ In fact, technology development and sharing have been encouraged in many instruments, for instance, Agenda 21 and Trade-Related Aspect of Intellectual Property Rights¹¹⁰ (TRIPS) of the World Trade Organization (WTO). According to Agenda 21, there is a need for favorable access to and transfer of environmentally sound technologies¹¹¹, in particular to developing countries . . . that should enable transfer of necessary technological know-how.”¹¹² Similarly, Article 7 of the TRIPS agreement encourages “[t]he promotion of technological innovation and the transfer and dissemination of technological innovations”¹¹³ According to Professor Elizabeth Burleson, by resolving the equity and efficiency aspects of clean technology transfer, we can achieve sustainable development.¹¹⁴ To put differently, the development and use of sound technology can prevent a world food crisis and preserve the environment.

Havana, Cuba is an inspiration to those communities striving for sustainable development, particularly in land-use planning for agriculture. Havana, Cuba has successfully implemented a program known as “urban organic agriculture”, which centers on cultivation that does not

¹⁰⁹ Schmidhuber, supra note at 105.

¹¹⁰ Understanding the WTO: Intellectual Property, available at http://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm7_e.htm (last visited Nov. 14, 2010). The TRIPs is administered by the World Trade Organization (WTO) and requires member-states to enact minimum protection for intellectual property rights, while encouraging technology transfer.

¹¹¹ AGENDA 21, Transfer of Environmentally Sound Technology, Cooperation and Capacity Building, supra note 86, Sec. IV, ch.34. (“Environmentally sound technologies protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes.”).

¹¹² AGENDA 21, at Sec. IV, ch.34.4.

¹¹³ Uruguay Round Agreement: TRIPs, Part I, General Provisions and Basic Principles, Art. 7 available at http://www.wto.org/english/docs_e/legal_e/27-trips_03_e.htm (last visited Nov. 14, 2010).

¹¹⁴ Elizabeth Burleson, Climate Change and Human Rights Symposium: Energy Policy, Intellectual Property, and Technology Transfer to Address Climate Change, 18 TRANSNAT’L L. CONTEMP. PROBS. 69, 93 (2009).

involve the use of chemical fertilizers, pesticides, or herbicides.¹¹⁵ Traditional agrochemicals have been replaced with organic fertilizers derived from decomposed organic material that would otherwise enter the city's sewage waste stream.¹¹⁶ Local scientist invented additional types of organic fertilizers when those from the waste stream were insufficient, rather than resorting back to chemical means.¹¹⁷ Much of the activity in the agricultural area has been in response to the extreme food shortages of the Special Period;¹¹⁸ developing local, sustainable, and minimal impact means of providing food was the only way to avoid mass starvation.¹¹⁹ In addition to providing sustenance for the population, it has called for the use of technology to boost food production, while protecting the environment.¹²⁰

VII. Conclusion

Peters notes that “our individual actions as well as local, state, and federal policies do not exist in a vacuum; every action has an impact on the world at large and on future generations.”¹²¹ To create a truly sustainable world, all of our decisions, from individual choices to federal policies, must consider the impact on the environment, economy, society, and national security.¹²² In other words, the various interests groups in society have to interact and participate if the objectives of sustainable development are to be met. Local involvement is especially crucial because nations often face-off on various issues pertaining to international law and how

¹¹⁵ Dechristopher, *supra* note 99, at 174.

¹¹⁶ See *id.*

¹¹⁷ *Id.*

¹¹⁸ See Rajendra Ramlogan, Protection of the Environment in Cuba: Piercing the Caribbean Iron Curtain, 29 U. MIAMI INTER-AM. L. REV. 37, 73 (1998) (“The Special Period in Cuba started in 1990 and is primarily due to the twin problems of the U.S. embargo and the collapse of Cuba’s major benefactor, the former Soviet Union.”).

¹¹⁹ Dechristopher, *supra* note 99, at 174.

¹²⁰ See *id.*

¹²¹ Peters, *supra* note 58, at 216.

¹²² See *id.*

they should be implemented because of the need to protect their national sovereignty. However, on a local level, this need is not as obvious; and a community-based approach can encourage good governance in meeting the objectives of sustainable development. These achievements would reach beyond economic development and environmental protection; because sustainable rural development must involve the local people, while preserving local culture.¹²³

In concluding, “locally-designed” and “locally-driven” approaches should be given precedence in the strategy to achieving sustainable development.¹²⁴ Protecting the environment by encouraging sustainable agricultural practices is best achieved by encouraging a community-based approach, with an emphasis on education and the development of technology. This type of community-based approach can propel the need for more sustainable practices on a national level. Since it is the local communities that know their needs best, and that can often provide the best solutions rather than a blanket approach, which is typical of national legislations and international treaties. In essence, it would address the holistic health of the community. Sustainable development is not a panacea, but it can and should be the guiding principle for improving the quality of life in our communities through sustainable agricultural practices.

¹²³ Dechristopher, *supra* note 99, at 157.

¹²⁴ Carew-Reid, *supra* note 52, at 11.