

IMPLEMENTING SUSTAINABLE INDUSTRIAL DEVELOPMENT
 IN THE UNITED STATES AND ABROAD:
 THE NEED FOR LEGISLATION AND INTERNATIONAL
 COOPERATION

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I. INTRODUCTION

Each day industrial development irreversibly damages the Earth's environment.¹ Depletion of natural resources, escalation in global warming, destruction of habitats, endangerment of species, and pollution of the Earth's air, land, and water are only a few of the harmful side effects of industrial development.² Sustainable industrial development is most commonly defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."³ In general terms, it entails not depleting the Earth's natural resources below sustainable levels and maintaining the planet's overall quality.⁴ Modern ideas of sustainable industrial development recognize that environmental protection and economic growth are not necessarily trade-offs.⁵

Unfortunately, existing laws designed to implement sustainable industrial development are inadequate. The main reason is the difficulty of determining how to implement sustainable development in a cost-effective manner⁶ and enforcing laws consistently throughout developing and developed countries alike.⁷ Existing law is comprised mostly of tax incentives aimed at encouraging cleaner and more efficient development, monetary penalties to deter pollution, and emissions trading. In fact, many existing government policies, in the United States and around the globe, encourage unsustainable development.⁸

One of the first steps to implementing sustainable industrial development is to recognize society has moral and ethical obligations to preserve

1. See Marvin S. Soroos, *Global Institutions and the Environment: An Evolutionary Perspective*, in *THE GLOBAL ENVIRONMENT: INSTITUTIONS, LAW, AND POLICY* 27 (Norman J. Vig & Regina Azelrod eds., 1999).

2. See Mary Christina Wood, *Advancing the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations (Part I): Ecological Realism and the Need for a Paradigm Shift*, 39 *ENVTL. L.* 43, 46-50 (2009).

3. WORLD COMM'N ON ENV'T & DEV., *OUR COMMON FUTURE* 43 (1987) [hereinafter *OUR COMMON FUTURE*].

4. See Norman J. Vig, *Introduction: Governing the International Environment*, in *THE GLOBAL ENVIRONMENT: INSTITUTIONS, LAW, AND POLICY*, *supra* note 1, at 5-6.

5. See *OUR COMMON FUTURE*, *supra* note 3, at 3; Gary Gardner & Thomas Prugh, *Seeding the Sustainable Economy*, in *WORLDWATCH INSTITUTE, STATE OF THE WORLD 2008: INNOVATIONS FOR A SUSTAINABLE ECONOMY* 4 (2008) [hereinafter *STATE OF THE WORLD 2008*].

6. See Michele M. Betsill, *Global Climate Change Policy*, in *THE GLOBAL ENVIRONMENT: INSTITUTIONS, LAW, AND POLICY*, *supra* note 1, at 103, 111.

7. See Soroos, *supra* note 1, at 27; FRANCES CAIRNCROSS, *COSTING THE EARTH: THE CHALLENGE FOR GOVERNMENTS, THE OPPORTUNITIES FOR BUSINESS* 149-76 (1992).

8. See LESTER BROWN ET AL., *SAVING THE PLANET: HOW TO SHAPE AN ENVIRONMENTALLY SUSTAINABLE GLOBAL ECONOMY* 131(1992); CAIRNCROSS, *supra* note 7, at 83; Wood, *supra* note 2, at 43-44 (discussing environmental statutory laws in the United States and the agencies that enforce them).

the Earth for future generations.⁹ The former Prime Minister of the United Kingdom, Margaret Thatcher, compared each generation's right to use the Earth to a "full repairing lease."¹⁰ The challenge lies in getting people to recognize and fulfill this moral obligation. As Margaret Thatcher explained, "To demand that this generation should undertake repairs means making people pay for something that they have previously regarded as free. Yet only government can ultimately set the terms of that 'full repairing lease.'"¹¹

History has shown that sustainable industrial development cannot be left to the markets alone. Neither the market nor current laws force companies, individuals, or governments to internalize the environmental damage they cause.¹² Instead, the costs are born by society as a whole.¹³ When companies, individuals, or governments analyze the anticipated costs of an industrial development project, they are not required to and typically do not account for how the project will damage the environment.¹⁴ Consequently, the environmental ramifications of a project are not incorporated into the project's overall cost, causing the project's apparent cost to be less than its true cost.¹⁵ Sustainable projects which may require heavier initial capital outlay appear more costly in comparison and are not implemented. In order for industrial development to become truly sustainable, governments must intervene where the markets have failed and implement policies and programs that require individuals, businesses, and governments to factor environmental damage into their cost analyses.

This Note will first address the cost of unsustainable development and the human race's impact on the environment, including altering the cycles of elements essential for life, climate change, air pollution, habitat destruction, species extinction, and consumption of nonrenewable natural resources. Next, the Note will address why the market alone cannot sufficiently incentivize sustainable industrial development. The Note will then discuss current laws in the area of sustainable industrial development, and analyze where the law has succeeded and failed. Finally, I propose a new plan that requires governments to step in where markets have failed and enact laws and promulgate regulations that assist in properly pricing their outputs in order to create market based incentives to encourage companies to act more sustainably.

9. CAIRNCROSS, *supra* note 7, at 17.

10. *See id.* at 6.

11. *See id.*

12. *See id.*; Robert K. Kaufmann, *Using the Market to Address Climate Change*, in WORLDWATCH INSTITUTE, STATE OF THE WORLD 2009: INTO A WARMING WORLD 103 (2009) [hereinafter STATE OF THE WORLD 2009].

13. CAIRNCROSS, *supra* note 7, at 18.

14. *Id.*; *see also* Kaufmann, *supra* note 12.

15. CAIRNCROSS, *supra* note 7, at 18.

II. THE COSTS AND CAUSES OF UNSUSTAINABLE INDUSTRIAL DEVELOPMENT

If nations do not soon recognize the consequences of unsustainable activities and take swift action, the Earth's environment and ecosystems could be irreversibly altered.¹⁶ It is a frightening concept to accept, but "[t]he planet humans have known for 150,000 years . . . is changing irrevocably thanks to human actions."¹⁷ This is largely attributable to the growth of the human population at unprecedented rates, which brings with it continued economic and industrial development.¹⁸ In 1987, the World Commission on Environment and Development stated that "[i]n many parts of the world, the population is growing at rates that cannot be sustained by available environmental resources, at rates that are outstripping any reasonable expectations of improvements in housing, health care, food security, or energy supplies."¹⁹ While economic growth is desirable, unsustainable economic growth pollutes the Earth's atmosphere and "pulls raw material from forests, soils, seas, and waterways."²⁰ Current unsustainable economic growth only invites future environmental and economic disasters.

A. Pollution and Climate Change

Global warming is a widely accepted scientific occurrence today and is understood to be significantly attributable to human activities.²¹ Global warming is caused by what is commonly known as the "greenhouse effect," a process where gases in the Earth's atmosphere trap heat, causing the Earth to retain more heat than it releases.²² The pollutants largely responsible for this are carbon dioxide, methane, and nitrous oxide. Carbon dioxide is primarily released into the Earth's atmosphere through fossil fuel combustion. Land clearing for agriculture exacerbates this problem by reducing the environment's ability to absorb and process carbon dioxide in the atmosphere. Methane is released through livestock production, extraction of fossil fuels, and biomass burning. Nitrous oxide is released primar-

16. See OUR COMMON FUTURE, *supra* note 3, at 32-33; Tim Jackson, *The Challenge of Sustainable Lifestyles*, in STATE OF THE WORLD 2008, *supra* note 5, at 47-48 (2008) ("[T]he Intergovernmental Panel on Climate Change has estimated that the world needs to reduce global emissions by as much as 80 percent over 1990 levels by 2050 if 'dangerous anthropogenic climate change' is to be averted.").

17. STATE OF THE WORLD 2009, *supra* note 12, at 5.

18. OUR COMMON FUTURE, *supra* note 3, at 4 ("Industrial production has grown more than fifty-fold over the past century . . .").

19. *Id.* at 11.

20. *Id.* at 4.

21. See STATE OF THE WORLD 2009, *supra* note 12, at 6, 13.

22. See OUR COMMON FUTURE, *supra* note 3, at 33; STATE OF THE WORLD 2009, *supra* note 12, at 5.

ily during industrial processes and through the use of fertilizers.²³ The sectors of the economy that release the most greenhouse gases are energy supply, which releases 25.9% of all the greenhouse gases released into the atmosphere; industry, contributing 19.4%; and forestry, contributing 17.4%.²⁴ Despite warnings by the Intergovernmental Panel on Climate Change (IPCC), “greenhouse gas emissions grew by 80 percent between 1970 and 2004 and could double again by 2030.”²⁵

Because of the levels of carbon dioxide and other greenhouse gases released into the Earth’s atmosphere today, average temperatures around the world will be higher than they have been in millions of years.²⁶ Even the slightest global warming could alter the climate around the world.²⁷ Climate change, in turn, alters the water cycle, destroys ecosystems by causing species migration and extinction, and threatens food supplies.²⁸ A rise in the Earth’s average temperature has already begun to melt the Arctic ice caps. Because of the melting of the Arctic ice caps, it is now possible to navigate a ship from the Atlantic Ocean to the Pacific Ocean without traveling through the Panama Canal or sailing around the tip of South Africa.²⁹ The melting of the polar ice caps may well cause a rise in sea levels that will threaten low lying coastal areas around the world.³⁰

Weather and temperature changes are capable of redistributing agricultural zones and destroying crops.³¹ In 2003, a heat wave across Europe not only killed 35,000 people but also caused agricultural losses of \$15 billion.³² According to the Global Development and Environment Institution, if human activity continues at the rate and in the manner it has been going in recent years, agricultural yields will begin to decline, and water supplies and ecosystems around the world will be damaged.³³

B. Destruction of Forests and Loss of Species

Each year, approximately thirteen million hectares of forest are destroyed.³⁴ Because forests absorb carbon dioxide in the Earth’s atmosphere, this level of deforestation is credited with contributing an additional

23. Robert Engelman, *Sealing the Deal to Save the Climate*, in STATE OF THE WORLD 2009, *supra* note 12, at 183.

24. *Id.* at 190.

25. Jackson, *supra* note 16, at 47.

26. Gardner & Prugh, *supra* note 5, at 3.

27. Engelman, *supra* note 23, at 172.

28. *E.g.*, STATE OF THE WORLD 2009, *supra* note 12, at 5–8.

29. Gardner & Prugh, *supra* note 5, at 5.

30. *Id.*

31. See OUR COMMON FUTURE, *supra* note 3, at 3.

32. Gardner & Prugh, *supra* note 5, at 7.

33. *Id.*

34. See STATE OF THE WORLD 2009, *supra* note 12, at 7.

6.5 billion tons of carbon dioxide to the atmosphere each year.³⁵ A warming environment, combined with the impacts of other human activities such as deforestation causes a rate of species loss estimated to be four per hour.³⁶ Since the Industrial Revolution began, the rate of extinction has grown to between fifty and five-hundred times greater than the natural rate of species extinction.³⁷

Some argue that preventing species extinction is a moral obligation imposed on all generations as a consequence of their actions and standards of living. However, preventing species extinction is not simply a moral obligation. It is necessary for maintaining the current standards of living around the world. Species extinction not only damages the economy, it also inhibits life-saving medical research. Species diversity results in improved crop species, new drugs and medicines, and more raw materials for industry, ultimately contributing billions of dollars to the economy each year.³⁸

C. Poverty

Industrialized and developing nations, alike, participate in unsustainable activities, but for different reasons. The high standard of living in industrialized nations is the main reason for their large contribution to damaging the Earth's environment.³⁹ In contrast, developing nations participate in unsustainable activities often because of their need to survive.⁴⁰ The poor, for example, are forced to focus on short term goals, such as how they are going to find their next meal. Consequently, they do not take into account the long term effects of their actions, and instead use the land or resources available to them for daily survival.⁴¹ The World Commission on Environment and Development expressed its belief in *Our Common Future* that "the development decisions of these countries . . . will have a profound effect upon the ability of all peoples to sustain human progress for generations to come."⁴²

35. STATE OF THE WORLD 2009, *supra* note 12, at 7; *see also* Kenton R. Miller et. al, *Deforestation and Species Loss*, in JESSICA TUCHMAN MATHEWS, PRESERVING THE GLOBAL ENVIRONMENT: THE CHALLENGE OF SHARED LEADERSHIP 79-80 (1991) [hereinafter PRESERVING THE GLOBAL ENVIRONMENT].

36. PRESERVING THE GLOBAL ENVIRONMENT, *supra* note 35, at 22.

37. Gardner & Prugh, *supra* note 5, at 7; OUR COMMON FUTURE, *supra* note 3, at 13 ("There is growing scientific consensus that species are disappearing at rates never before witnessed on the planet . . .").

38. OUR COMMON FUTURE, *supra* note 3, at 13.

39. *See id.* at 28.

40. *See* Tom H. Tietenberg, *Managing the Transition: The Potential Role for Economic Policies*, in PRESERVING THE GLOBAL ENVIRONMENT, *supra* note 35, at 199 (poverty is "a significant factor in promoting unsustainable economic activity").

41. OUR COMMON FUTURE, *supra* note 3, at 28.

42. *Id.* at xii.

D. Importance of Sustainability for Economies

While there is a moral and ethical obligation to protect the environment and preserve it for future generations, there are also serious economic implications of unsustainable development.⁴³ For example, deforestation and species loss “represent a serious threat to the economies of many nations” because forests can provide many valuable resources such as food, fuel, medicines, and building materials.⁴⁴ Some people argue that investing in a green economy slows economic growth,⁴⁵ but failing to invest in sustainable activities only forestalls the inevitable. Eventually, the bubble will burst and economic growth will come to a standstill because natural resources that are necessary to the operation of current technology will be depleted.

III. CURRENT STATE OF THE LAW AND WHY IT IS INADEQUATE

An externality occurs when the costs of an activity are imposed on those who do not participate in or directly benefit from the activity.⁴⁶ Externalities most commonly occur when resources are either commonly owned or not owned by anyone.⁴⁷ When the atmosphere or a natural resource is not privately owned and there is instead “open access,” there are no market mechanisms to force companies or individuals to internalize the costs of their activities.⁴⁸ For example, without some form of government intervention, a factory can pollute the Earth’s atmosphere at no cost to the factory.

When there is nothing forcing companies or individuals to internalize the costs of polluting or consuming natural resources at unsustainable rates, environmental damage becomes an externality, where the damage and costs are instead placed on the environment and society as a whole.⁴⁹ Consequently, there is no incentive for any one person to protect the environment. Rather, there is incentive to exploit the environment for individual gain and let the environment and society as a whole bear the consequences.⁵⁰ Perhaps Nicholas Ridley explained it best: “Pollution, like

43. See PRESERVING THE GLOBAL ENVIRONMENT, *supra* note 35, at 24.

44. Miller et al., *supra* note 35, at 95.

45. See CAIRNCROSS, *supra* note 7, at 23.

46. E.g., OUR COMMON FUTURE, *supra* note 3, at 34 (“Many who bear the risk [of toxic waste disposal] do not benefit in any way from the activities that produce the wastes.”).

47. CAIRNCROSS, *supra* note 7, at 18; see also Jonathan Rowe, *The Parallel Economy of the Commons*, in STATE OF THE WORLD 2008, *supra* note 5, at 142–43 (common ownership does not impose as many externalities as “open access”).

48. See Kaufman, *supra* note 12, at 103 (“By definition, externalities are not corrected by the market—government intervention is required.”).

49. See *id.*; CAIRNCROSS, *supra* note 7; STATE OF THE WORLD 2009, *supra* note 12, at 12.

50. CAIRNCROSS, *supra* note 7, at 63.

fraud, is something you impose on others against their will so that you can perhaps gain financial advantage. It is an ill for which the operation of the free market provides no automatic cure.”⁵¹

A. Market Failure

Almost all levels of unsustainable activity can be traced to the underpricing of natural resources and a failure to recognize the true cost of energy consumption, pollution, and resource consumption.⁵² Because the cost of exploiting resources at unsustainable rates is an externality, markets do not incorporate the cost into the market price of the resource.⁵³ Consequently, the price of the resource is below the actual cost of consuming the resource.⁵⁴ It is a basic economic principle that the lower the price of a product or resource, the higher the consumption rate of that product or resource. If the costs imposed on the environment and society were instead incorporated into the price of the resource, consumption of the resource would decrease as its price approached its actual cost. Because unsustainable activities are underpriced, sustainable technology and practices, which may require a higher initial capital outlay, are viewed as too expensive and less cost-effective.⁵⁵

Energy consumption and pollution are arguably the two most environmentally costly activities, yet they are highly underpriced, especially in the United States as compared to other developed countries in Europe. Despite the rise in energy prices over the past few years, energy prices in many countries are still substantially lower than the cost imposed on the environment by energy consumption.⁵⁶

The market also fails to send the proper signals to consumers and investors in ways other than cost. For example, in the United States, under the reporting requirements of the Financial Accounting Standards Board (FASB), companies are not required to disclose many environmental liabilities.⁵⁷ Some of these liabilities include increased regulatory risks such as carbon taxes or pollution reduction requirements that will raise costs and may even require some facilities to close.⁵⁸ Even under the Emergency

51. *Id.* at 6.

52. *Id.* at 63 (“[O]ne of the principal reasons for environmental damage is the failure of markets to provide the right signals.”); *see also* Miller et. al, *supra* note 35, at 91.

53. *See* CAIRNCROSS, *supra* note 7, at 7–8; OUR COMMON FUTURE, *supra* note 3, at 28 (“[T]he creation of pollution . . . is not adequately accounted for in figuring the costs of production processes.”).

54. *E.g.*, Kaufmann, *supra* note 12 at 103–05.

55. *See* CAIRNCROSS, *supra* note 7, at 72.

56. Tietenberg, *supra* note 40, at 199.

57. Mark Latham, *Environmental Liabilities and the Federal Securities Laws: A Proposal for Improved Disclosure of Climate Change Related Risks*, 39 ENVTL. L. 647 (2009).

58. *Id.* at 686–91.

Planning and Community Right-to-Know Act of 1986 (EPCRA), which requires industrial facilities to report use of certain chemicals above a threshold amount, carbon dioxide is not considered a “toxic chemical.”⁵⁹ Additionally, the market sends few, if any, signals to consumers about the environmental damage caused during the production processes of the products they purchase, and what products may have been produced in more efficient and less harmful manners.

B. Current Organizations and Laws

1. International Organizations and Laws

In 1966, the United Nations created the United Nations Industrial Development Organization (UNIDO) for the purpose of promoting and accelerating industrialization in developing countries.⁶⁰ The World Commission on Environment and Development (WCED) was created by the United Nations “as a response to the continuing misgivings of the developing countries.”⁶¹ In 1987, the WCED published its report on the state and future of sustainable development, *Our Common Future*, where it stated its goal was “[t]o propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond.”⁶² In 1992, Agenda 21 was adopted by more than 178 governments at the United Nations Conference on Environment and Development.⁶³ It is a comprehensive plan of action for implementing sustainability on an international and local level.⁶⁴ Shortly after Agenda 21 was adopted, the United Nations General Assembly created the Commission on Sustainable Development (CSD) as a mechanism of implementing and enforcing Agenda 21.

Despite efforts by UNIDO, WCED, and CSD, one of the major challenges today remains disagreements between developing and developed countries about how sustainability should be implemented. The perception of many developing countries is that international sustainability efforts fail to impose adequate standards on the industrialized countries whose high standards of living are the main causes of today’s crisis.⁶⁵ Consequently, developing nations are slow to join any international agreements.⁶⁶ The

59. *Id.*; 42 U.S.C. § 11023 (2006).

60. U.N. INDUS. DEV. ORG., A BRIEF HISTORY, [http:// www. un. ido. org/ index. php? id = 7845](http://www.unido.org/index.php?id=7845).

61. Soroos, *supra* note 1, at 33.

62. OUR COMMON FUTURE, *supra* note 3, at ix.

63. U.N. DEP’T OF ECON. & SOC. AFF.: DIVISION FOR SUSTAINABLE DEVELOPMENT, AGENDA 21, [http:// www. un. org/ esa/ dsd/ agenda 21/](http://www.un.org/esa/dsd/agenda21/).

64. *Id.*

65. See Madhur Singh, *India Ups Ante Against “One-Sided” Western Discourse on Climate Change*, 32 INT’L ENV’T REP. 929 (Oct. 14, 2009).

66. *Id.* at 31.

impact of CSD “has been severely limited because governments have given it neither the authority to make binding decisions nor the financial resources to provide substantial funding for sustainable development.”⁶⁷ Since the CSD was created, “environment and development situations around the world seem to have deteriorated further.”⁶⁸ Other reasons that international efforts to implement sustainable industrial development have failed include the difficulty of enforcing international agreements,⁶⁹ local governments subsidizing unsustainable activities, and challenges in creating uniformity among nations.

Perhaps the most effective international agreement on climate change to date has been the Montreal Protocol, which, according to UNIDO has contributed five times more to climate change mitigation than efforts under the Kyoto Protocol.⁷⁰ The Montreal Protocol was an agreement to reduce and eventually eliminate the production and use of ozone depleting chemicals.⁷¹ The Kyoto Protocol sets specific reduction targets in greenhouse gases for each party to the agreement to meet by a specified time, and is set to expire in 2012.⁷² While the Kyoto Protocol has experienced success, it was not as successful as the Montreal Protocol because it failed to get key players to join the agreement, including the United States⁷³ and China, which are the largest contributors of greenhouse gases.⁷⁴ Despite efforts under the Kyoto Protocol, greenhouse gas emissions continue to increase globally.⁷⁵ In December 2009, representatives from 190 nations met in Copenhagen to discuss what agreement should follow the Kyoto Protocol.⁷⁶ The Intergovernmental Panel on Climate Change (IPCC) estimates “that the world needs to reduce global emissions by as much as 80 percent over 1990 levels by 2050” in order to prevent dangerous and irreversible damage to the Earth’s environment.⁷⁷

67. Soroos, *supra* note 1, at 27.

68. *Id.* at 41.

69. Norman J. Vig et al., *Introduction: Governing the International Environment*, in *THE GLOBAL ENVIRONMENT: INSTITUTIONS, LAW, AND POLICY 2* (2011) (“Many of the international environmental institutions lack adequate funding and effective enforcement mechanisms.”).

70. See U.N. INDUS. DEV. ORG., USING MONTREAL PROTOCOL TO PROTECT CLIMATE CHANGE, available at http://www.unido.org/fileadmin/user_media/UNIDO_Header_Site/Subsites/Green_Industry_Asia_Conference_Maa_nila_MP_Protect_Clim ate .pdf.

71. JAMES GUSTAVE SPETH, *RED SKY AT MORNING: AMERICA AND THE CRISIS OF THE GLOBAL ENVIRONMENT* 88–89 (2004).

72. *E.g., id.*; Dean Scott, *U.S. Unlikely to Go Beyond House Targets in Copenhagen Talks*, *U.S. Negotiator Says*, 32 INT’L ENV’T REP. 830 (Sept. 16, 2009).

73. Jody Freeman & Andrew Guzman, *Climate Change and U.S. Interests*, 109 COLUM. L. REV. 1531, 1538 (2009) (“[T]he U.S. Senate could not be persuaded to ratify the Kyoto Protocol even after President Clinton signed it, in part because the benefits of doing so were not perceived to be significant enough to outweigh potential costs to the U.S. economy.”).

74. Scott, *supra* note 72.

75. Engelman, *supra* note 23, at 172.

76. Scott, *supra* note 72.

77. Jackson, *supra* note 16, at 47–48.

It is suspected that the United States will not join an agreement without legislative approval, which is unlikely with the current Republican-led Congress.⁷⁸ Even when legislation that would reduce emissions was before Congress in the summer of 2010, it failed to recognize the level of emissions reductions actually needed, and failed to recognize the need for international cooperation. The House version approved only a seventeen percent reduction in emissions over 2005 levels by 2020, while the Senate version approved a twenty percent reduction.⁷⁹ While the proposed legislation did call for reductions in emissions by eighty percent by 2050, the eighty percent reduction was based on current greenhouse gas emissions.⁸⁰ But, the IPCC believes that an eighty percent reduction over 1990 levels is necessary.⁸¹

Many parties discussing climate change negotiations leading up to Copenhagen believed that “a comprehensive and ratifiable treaty emerging from the talks [was] unlikely.”⁸² Unfortunately, these parties were correct, as no comprehensive and ratifiable agreement was reached during the Copenhagen meetings, in large part because of the United States’ reluctance to join any international agreement regarding emissions reductions.⁸³

2. Government Subsidies of Unsustainable Activities

Several factors contribute to the level of deforestation occurring today, including government subsidized agricultural prices that encourage land clearing.⁸⁴ In other words, governments are assisting in lowering the costs of consuming natural resources at unsustainable rates. Consequently, there is an even greater disparity between the actual cost of consuming the natural resource and its price. According to the WCED, in the past one hundred years, more land has been cleared for agriculture than in all the years of human existence combined.⁸⁵ Governments continue to subsidize forest clearing because “neither the true value of the forest—both its biological resources and the environmental services it renders—nor the true cost of exploiting it is accurately calculated.”⁸⁶

78. See *infra* note 115.

79. Dean Scott & Eric J. Lyman, *As Hope for Binding Climate Deal Fades, Copenhagen Aims to be a Springboard for 2010*, 32 INT’L ENV’T REP. 1045 (Nov. 25, 2009).

80. *Id.*

81. Jackson, *supra* note 16, at 47–48.

82. Eric J. Lyman, *Barcelona Talks End with Differing Views on Attainable Goals for Year-End Summit*, 32 INT’L ENV’T REP. 1001 (Nov. 11, 2009); see also Scott & Lyman, *supra* note 79.

83. *As Copenhagen Talks Near, What are Prospects for Success?*, YALE ENV’T 360 (Nov. 23, 2009), available at <http://e360.yale.edu/content/feature.msp?id=2213>.

84. Gardner & Prugh, *supra* note 5, at 7; CAIRNCROSS, *supra* note 7, at 83.

85. OUR COMMON FUTURE, *supra* note 3, at 31–33.

86. Miller et al., *supra* note 35, at 91.

Governments, including the United States, treat the forest as income, rather than a capital asset that is being depleted, causing them to overvalue the unsustainable clearing of the forest and undervalue the sustainable services and resources it can provide.⁸⁷ Even in the United States, a “variety of direct government subsidies to farmers further lowers the private, but not the social, cost of . . . agriculture.”⁸⁸

Many governments, including the United States, still participate in pesticide subsidies in order to keep pesticide costs low for farmers.⁸⁹ It is well established that many pesticides used in agriculture not only have dangerous health risks, but also lower long-term crop yields. Lowering the costs of harmful pesticides “inhibit[s] the development and use of integrated pest management.”⁹⁰ Pesticide subsidies lowering the costs of using pesticides prevent producers and consumers alike from internalizing and recognizing the actual costs of pesticides. Pesticides’ apparent costs are lower than their actual costs, preventing producers from using long-term sustainable methods, which may have higher initial capital outlays, but ultimately lower long-term costs. While the market alone may not impose the true cost on producers and consumers of an unsustainable activity, government policies that further reduce the costs of unsustainable activities such as pesticide use, only exacerbate the problem by making the cost differential between unsustainable activities and sustainable activities even greater.⁹¹ While the market alone may not solve the externality problem, poor government policies are even worse.

3. *Lack of Uniformity*

One of the main failures of international efforts to implement sustainable industrial development is a lack of uniform laws and regulations around the globe that discourage unsustainable activities and encourage sustainable activities. The lack of uniformity causes a phenomenon known as “carbon exporting” or “leakage.”⁹² When one country implements carbon taxes, for example, businesses may find it cheaper to move production to a country that does not impose carbon taxes. The well-intended policy implemented by the environmentally-conscious government then has the unfortunate effect of transferring the pollution to another part of the world.⁹³ Not only are emissions not reduced, but the local economy loses

87. See John Talberth, *A New Bottom Line for Progress*, in STATE OF THE WORLD 2008, *supra* note 5, at 19–21.

88. Tietenberg, *supra* note 40, at 199.

89. BROWN ET AL., *supra* note 8, at 131.

90. *Id.* at 132.

91. *Id.* at 131.

92. See Tao Wang & Jim Watson, *Trade, Climate Change, and Sustainability*, in STATE OF THE WORLD 2009, *supra* note 12, at 88.

93. *Id.*

business.⁹⁴ This phenomenon is not limited to carbon taxes and emissions regulations, but occurs when a country attempts to regulate in any area of the environment. For this reason, many countries have been slow to implement policies that might encourage businesses to take their activities elsewhere. The lack of signals to investors and consumers⁹⁵ exacerbates this problem because corporations are typically not held accountable by consumers or investors for shifting unsustainable and environmentally costly activities to other nations.⁹⁶

This is exactly what has occurred in China in recent years. Under the current U.N. Framework Convention on Climate Change, emissions released during the production of internationally traded products are attributed to the producing nation.⁹⁷ This framework permits “carbon exporting”⁹⁸ and “leakage.”⁹⁹ Corporations move production to countries such as China that do not have binding carbon emissions targets and then ship their products back into the countries that do implement carbon emissions targets. Consumers buy and use the same products, yet the carbon emissions released during the production of the products are exported to another country.

More than one third of China’s total economic output comes from exports alone, which is a higher percentage than any other similarly sized economy.¹⁰⁰ In 2006, nearly fifty-eight percent of China’s exports were produced by multinational ventures, and of foreign investment in the Chinese economy, nearly seventy percent went towards production.¹⁰¹ Two-thirds of the growth in carbon emissions since 2000 is attributable to China.¹⁰² This evidence “show[s] that consumers in industrial countries are indirectly responsible for a significant proportion of China’s carbon emissions.”¹⁰³

The situation with China exemplifies the importance of implementing uniform sustainability policies. Without an international effort, industrial development will never become truly sustainable, but will instead shift emissions and harmful activities to other parts of the world. Without the proper signals to consumers and investors, individuals will continue to consume products produced in countries with low sustainability standards

94. Tietenberg, *supra* note 40, at 190–191 (“Countries that unilaterally set out to improve the global environmental situation run the risk of making their businesses vulnerable to competition from less conscientious nations.”).

95. *See supra* note 51.

96. Talberth, *supra* note 87, at 27.

97. Wang & Watson, *supra* note 92.

98. *Id.*

99. *OECD Orders Cost-Effective Action on Climate*, 32 INT’L ENV’T REP. 857 (Sept. 16, 2009).

100. Wang & Watson, *supra* note 92.

101. *Id.*

102. Engelman, *supra* note 23, at 172.

103. Wang & Watson, *supra* note 92, at 88.

and the net effect of the local nations' efforts will be zero. Not only will the local nations' efforts be stifled, but local industries will suffer because they will be forced to compete with corporations that produce in nations with substandard regulations.¹⁰⁴

4. Taxes and Cap and Trade Systems

While many countries have been imposing taxes on non-sustainable activities, the taxes do not force individuals and companies to internalize the entire cost of their activities because many current tax rates are not determined based on a policy of imposing the full cost, but on other policies, such as the level of revenue the government desires.¹⁰⁵ For example, in the United States, gasoline taxes are often determined by how much revenue the government needs to finance the expansion of roads.¹⁰⁶ Even in its efforts to fulfill the requirements of the Montreal Protocol, the United States "imposes a tax on chlorofluorocarbons (CFCs)[,] . . . but this tax is designed to eliminate windfall profits."¹⁰⁷ More recently, President Obama proposed increasing an oil excise tax on petroleum by one cent per barrel.¹⁰⁸ This one cent price increase is not based on imposing the actual environmental costs on corporations, but rather on the estimated amount needed to fund the Oil Spill Liability Trust Fund.¹⁰⁹

While the Oil Spill Liability Trust Fund is a necessary and important safety net, the government's approach to the Fund exemplifies the fundamental flaws in the policies used to protect the environment. Many of these policies, like those followed in implementing the Fund, focus on raising revenues and attempting to fix environmental damage after the fact, rather than imposing the true environmental costs on the responsible corporations and individuals.

An emissions trading program "sets transferable quantity limits on emissions."¹¹⁰ Emissions trading programs were developed largely in an effort to fulfill requirements of the Kyoto Protocol in the European Union. Often times, however, emissions trading programs allow a threshold level of pollution before requiring a facility to purchase tradable permits.¹¹¹ In

104. Tietenberg, *supra* note 40 ("[I]ndustries in the United States have been reluctant to accept an emission tax approach, fearing that the resulting rise in pollution control costs would make them competitively vulnerable in world markets.").

105. *E.g.*, *id.* at 216.

106. *Id.*

107. *Id.* at 205-06.

108. Alan Kovski, *White House Wants to Boost Spill Liability, Increase Tax to Support Spill Response Work*, 41 ENV'T REP. 1089 (May 14, 2010).

109. *Id.*

110. Tietenberg, *supra* note 40, at 208.

111. *E.g.*, Zoë Chafe & Hilary French, *Improving Carbon Markets*, in STATE OF THE WORLD 2008, *supra* note 5, at 91.

the past, emissions trading programs have followed a grandfathering system, where the threshold level of pollution permitted or the number of tradable permits allotted to a facility are based on its historical levels of pollution.¹¹² This system imposes a lower standard on those facilities currently contributing the most greenhouse gases, and fails to force facilities to internalize the costs of pollution.¹¹³

5. Flaws in the Current Emissions Reporting Standards in the United States

The United States lags significantly behind its European Union counterparts with its emissions reduction programs and emissions reporting standards. There is significant disagreement as to whether there needs to be any type of environmental regulation in the United States, and, even amongst those who believe there should be, there is disagreement as to the appropriate level and manner of environmental regulation.

While the European Union has had cap and trade systems in place for years,¹¹⁴ Congress recently failed to garner enough support to pass legislation to either implement a cap and trade system or impose more stringent emissions standards. With the new Republican-led Congress, any cap and trade or emissions legislation is off the table.¹¹⁵ In fact, recent efforts have been aimed at stripping the EPA of much of its power to regulate and impose emissions standards.¹¹⁶ Even where the Congress and the EPA have managed to agree on emissions standards, the current regulations contain several flaws.

In May 2010, the EPA released a rule that requires only the largest new sources of greenhouse gases to seek permits, report, or control emissions.¹¹⁷ Small sources, like restaurants, farms, and apartment buildings are not subject to the permit requirements imposed on larger producers of greenhouse gases.¹¹⁸ This exhibits one of the fundamental flaws in the United States government's approach to sustainable industrial development. While smaller sources of greenhouse gases may require different treatment and approaches, in the aggregate, these smaller sources still significantly contribute to environmental degradation.

112. *See id.*

113. *See id.* at 96.

114. Aaron Ezroj, *How Cap and Trade Will Fuel the Global Economy*, 40 ENVTL. L. REP. NEWS & ANALYSIS 10696 (2010).

115. Andrew Childers et al., *U.S. Plans Action in 2011 on Air Pollution, Climate Change, Pesticides, Nanomaterials*, 34 INT'L ENV'T REP.44 (Jan. 5, 2011) (Special Report).

116. *Id.*

117. Steven D. Cook, *EPA Restricts Emissions Control Rules to Largest Greenhouse Gas Sources*, 41 ENV'T REP. 1049 (Nov. 14, 2010).

118. *Id.*

Furthermore, this type of approach that exempts small sources from any permit requirements or emissions standards may hurt the smaller sources in the long run. Since larger sources are required to seek permits for certain levels of greenhouse gas emissions,¹¹⁹ they are forced to internalize at least a small portion of the environmental costs. Once these larger sources are forced to internalize the environmental costs of their production processes, sustainable activities will become relatively more cost effective. These larger sources now have some incentive to develop and implement more sustainable activities, while the smaller sources do not have the same incentive, as they are not required to internalize any of their environmental costs. In the long run, because of these economic incentives, these larger sources will be steps ahead of the smaller sources in reaching sustainable development.

C. Using GDP and GNP as Economic Indicators

Analyzing a country's economic success based solely on GDP is akin to a corporation analyzing its success based solely on revenues.¹²⁰ However, revenues are only one indicator. Revenues mean nothing when not analyzed simultaneously with costs. Despite high revenues, a corporation may still operate for a loss. This is essentially what countries have been doing by relying solely on GDP or GNP numbers as indicators of their economic successes.¹²¹ Under the GDP and GNP indicators, natural resources are treated as an unlimited resource or income, which inhibits countries from measuring their true national productivity and the actual sustainability of that level of productivity.¹²² GDP "does not measure environmental sustainability."¹²³ National productivity cannot be accurately measured "unless such natural resources as forests and species diversity are treated as capital assets, thus allowing capital increases or depreciation to be fairly represented as the resource is either maintained or exploited."

¹²⁴ The European Commission is set to propose an environmental index to complement GDP in 2010.¹²⁵ The index, which would be published along-

119. *Id.*

120. PRESERVING THE GLOBAL ENVIRONMENT, *supra* note 35, at 36 (discussing "the failure of national income accounts, as currently formulated, to value and depreciate a country's physical resources").

121. *See, e.g.*, Miller et al., *supra* note 35, at 95, 101.

122. *Id.*; *see also* Tietenberg, *supra* note 40, at 197; Steven Gardner, *EU Commission Sets Out Plans to Measure Environmental Sustainability Along with GDP*, 32 INT'L ENV'T REP. 818 (Sept. 16, 2009)

123. Gardner, *supra* note 122 (internal citations and quotations omitted).

124. Miller et al., *supra* note 35, at 101.

125. Gardner, *supra* note 122.

side GDP, would address “greenhouse gas emissions, loss of biodiversity and landscapes, air pollution, water use, and waste generation.”¹²⁶

IV. THE FUTURE OF SUSTAINABILITY

A. Congress Must Act—Litigation Is an Insufficient Means

It is virtually impossible for the United States to even approach sustainable development without Congress passing legislation aimed at imposing the actual environmental costs of development on corporations and consumers.¹²⁷ The markets are not suited for solving the externality problems facing the country when it comes to sustainable development; many current government policies are actually worse than leaving the problem to the market.

Litigation in the courts alone is an insufficient solution to solving the externality problem. While imposing liability and allowing individuals to sue would help to impose the actual costs of development, for many environmental harms it is difficult for a plaintiff to establish that they have standing to sue or to prove that the harm they have suffered is sufficiently causally connected to the defendant’s conduct.

In *Connecticut v. American Electric Power Co.*, the Second Circuit held that eight states had standing to sue six electric power companies for the defendants’ contributions to the public nuisance of global warming under federal common law.¹²⁸ However, this ruling does not necessarily translate into individuals and non-government entities having the ability to sue for environmental harms caused by global warming because the case specifically addressed the standing of states to sue for those harms.¹²⁹ States are much more capable than other individuals or organizations in establishing the harm suffered from global warming and establishing a causal connection to the defendant’s conduct.

The court also held that federal legislation affecting air pollution has not yet displaced the federal common law of public nuisance in the climate change area.¹³⁰ While the Second Circuit was the first court to accept potential tort remedies for injuries allegedly caused by climate change,¹³¹ litigation still remains an insufficient means of implementing sustainable development.

126. *Id.*

127. *See supra* text accompanying notes 52–59 (addressing market failure and externalities).

128. 582 F.3d 309 (2d Cir. 2009).

129. *See id.*

130. *Id.*

131. Jim Stimson, Steven Patrick, & Steven D. Cook, *Appeals Court Reinstates States’ Lawsuit Against Utilities Over Greenhouse Emissions*, 40 ENV’T REP. 2227 (Sept. 25, 2009).

Additionally, the costs associated with litigating these issues makes litigation a less efficient means of imposing environmental externalities. Litigating each case individually is much more costly for plaintiffs and defendants alike than having legislation that provides a uniform system of imposing environmental costs. It is also time consuming and invites case by case analysis, potentially resulting in different outcomes across the country until a precedent can be established, which may take years.

The Second Circuit's opinion suggested that once Congress and administrative agencies are farther along in regulating greenhouse gas emissions, then the regulations may replace the federal common law of public nuisance in the climate change area.¹³² While litigation alone is not a sufficient method for solving the externality problem, it is currently the only method for federal agencies, state governments, and individuals to do so.

If Congress passes more legislation addressing greenhouse gas emissions and climate change, then the federal common law of public nuisance in the climate change area will be replaced.¹³³ Litigants will no longer have a source of redress to impose environmental costs on producers and developers. If federal legislation does not itself impose the environmental costs, then it will be left to the markets alone. It is therefore vitally important not only that Congress address the issue of markets' failure to impose environmental costs, but that Congress focus on providing sufficient methods for agencies, states, and individuals to impose those environmental externalities on responsible parties.

A uniform system throughout the country for imposing environmental costs on those responsible is significantly more efficient than case-by-case litigation which invites conflicting results. A uniform system would establish predictability and certainty, allowing businesses to make appropriate capital investments to achieve the reduction in environmental costs that is required by the legislation.

B. Market Based Incentives

The first step in achieving true sustainability is implementing a system that properly prices pollution and consumption of energy and natural resources.¹³⁴ Once these are properly priced in the market place, the costs will no longer be externalities.¹³⁵ Companies and individuals will be forced to pay higher prices, effectively forcing them to internalize the costs of their activities that harm the environment. Because of the market failure,

132. *Id.*

133. *Id.*

134. See *OECD Orders Cost-Effective Action on Climate*, *supra* note 99 (OECD brief concluded that tackling climate change requires a variety of market instruments including carbon taxes and greenhouse gas emissions trading schemes).

135. See *supra* notes 52-53.

government action is a necessity. There are several different methods by which governments can effectively force companies and individuals to internalize the costs of their activities, including taxes, cap and trade systems, higher standards of disclosure of environmental liabilities, and energy labeling requirements.

1. Proper Pricing Through Taxes and Cap and Trade Systems

While many governments have already implemented taxes and cap and trade systems, these programs have not gone far enough in forcing companies and individuals to internalize the actual costs of their activities.¹³⁶ Many governments face fierce opposition to tax increases, and have instead chosen to implement cap and trade programs.

Taxes, however, are a more effective method for forcing corporations and individuals to internalize the actual costs of their activities.¹³⁷ They should be imposed not only on greenhouse gases, but also on any other non-sustainable consumption of resources. Many of the taxes currently in place in the United States are not based on imposing the costs of environmental damage on producers and consumers, however.¹³⁸

Because the market price of polluting or consuming resources is lower than the actual price, taxes will increase the cost of those activities, forcing corporations and individuals to internalize the actual costs. Emissions taxes encourage sustainable practices because they force polluters to “minimize their cost by controlling until the marginal cost of control is equal to the per unit tax.”¹³⁹ In other words, as long as the per unit tax is higher than the per unit cost of reducing pollution, facilities will reduce their emissions because it will be more cost effective.

The majority of companies and individuals will implement sustainable technology and practices only if it is cost effective.¹⁴⁰ For this reason, tax incentives, such as decreasing taxes on sustainable activities, as suggested above, are an essential factor in the success of achieving sustainability through taxes. It is possible that even if taxes force individuals and corporations to internalize the costs of their activities, they will still continue their unsustainable practices because the benefit they receive may still be greater than the cost. For example, if the per unit tax on pollution becomes less than the per unit cost of reducing pollution, then the business will choose to pollute and pay the tax.

136. See *supra* note 89.

137. See *supra* notes 105–113 (discussing problems with cap and trade systems); see also Tietenberg, *supra* note 40, at 196, 206.

138. See *supra* note 108 (discussing President Obama’s proposal to raise oil taxes based on funding a clean up and recovery fund).

139. Tietenberg, *supra* note 40, at 206.

140. See CAIRNCROSS, *supra* note 7, at 121.

It is therefore not only necessary to raise the price for these unsustainable activities, but also to lower the cost of sustainable activities. Lowering the taxes on sustainable activities, while simultaneously increasing the taxes on unsustainable activities, makes it much more likely that the sustainable activities will become more cost effective than the unsustainable activities. Corporations will then be more likely to invest in sustainable technology and processes as they become more cost effective.¹⁴¹ Imposing taxes that increase the price of unsustainable activities, “affords renewable sources and energy conservation the opportunity to compete on a level playing field.”¹⁴²

In order to decrease the likelihood that businesses and individuals will decide that paying taxes is still cheaper, incremental block pricing can be used.¹⁴³ Instead of imposing a per unit tax on pollution or consumption of a natural resource, the tax rate per unit can increase at higher levels of pollution or consumption.¹⁴⁴

2. *Distributing Environmental Tax Revenues*

One of the primary arguments against imposing taxes is that it is too costly for producers, and for sustainability to be successful, it must be cost effective. However, any tax increase on unsustainable activities can be offset by a tax decrease on sustainable activities, such as labor.¹⁴⁵ Perhaps businesses and, more broadly, the public would favor such an increase in tax if there were provisions that compensated them through other tax decreases.¹⁴⁶

This solution would be beneficial for both governments and corporations. Governments’ overall tax revenues can potentially remain the same by shifting taxes on sustainable resources and activities to unsustainable activities. While corporations will be forced to pay higher taxes on certain activities and resources, this tax increase will be offset by lower taxes on sustainable activities, making sustainability more cost effective.¹⁴⁷

If taxes are not effective in implementing sustainable development, or in other words, if the actual cost of the unsustainable activities is still lower than the benefit received, the tax revenues collected can be put towards developing cost effective sustainable technology. Many countries in Europe who impose emissions taxes earmark the revenue collected for

141. Tietenberg, *supra* note 40, at 207 (increasing taxes on unsustainable activities encourages the development of environmentally sustainable technology); *see also* CAIRNCROSS, *supra* note 7, at 93.

142. Tietenberg, *supra* note 40, at 218; *see also* Gardner & Prugh, *supra* note 5, at 12.

143. *See* Tietenberg, *supra* note 40, at 218.

144. *Id.*

145. *Id.* at 196.

146. *Id.*

147. *Id.*

environmental improvement projects.¹⁴⁸ This could be expanded beyond emissions taxes to developing sustainable technology in other areas such as agriculture and energy consumption. Poland recently launched a National Fund for Environmental Protection and Water Management which will provide \$265 million to the largest emitters of greenhouse gases in Poland to be used to employ more energy efficient technologies.¹⁴⁹ The \$265 million has been collected over the past thirty years “from fines imposed on industrial polluters and proceeds from low-interest loans offered to the polluters at favorable rates for improvement of the environment.”¹⁵⁰

This system is only a temporary solution, however. If increasing taxes on unsustainable activities is successful in forcing companies to internalize the cost of their activities and shift towards sustainability, then governments’ tax revenues will eventually decrease.¹⁵¹ Another difficulty with implementing this system is determining the actual cost of unsustainable activities and then the proper level of taxes to impose.¹⁵² Despite the potential downsides of increasing taxes, it is a necessary and effective step in a move towards sustainability. Higher taxes will at least approach the actual cost of unsustainable activities, while a failure to act will allow the current system to thrive at the environment and future generations’ expense.

While not as effective as taxes, a cap and trade system can be used to reduce the release of greenhouse gases.¹⁵³ However, many of the programs currently in place need to be reformed. The grandfathering system¹⁵⁴ of determining how many credits a facility receives should be abandoned. While not ideal, an auctioning process is more effective.¹⁵⁵ For one, it avoids favorable treatment to those facilities that cause the most damage to the environment.¹⁵⁶ Additionally, it does not allow any level of pollution for free, whereas the grandfathering system allows facilities to pollute up to a certain limit without internalizing any of the costs.

Under an auction system, the price paid for credits will essentially impose on corporations the actual cost of their activities, forcing facilities to internalize a portion of the cost of their pollution. If the price is too high,

148. *Id.* at 207.

149. Bogdan Turek, *Poland Offers \$265 Million to Companies to Help Them Boost Energy Efficiency*, 34 INT’L ENV’T REP. 80.

150. *Id.*

151. Tietenberg, *supra* note 40, at 196 (“To the extent that they succeed in reducing the activity being taxed, environmental taxes undermine the tax base.”).

152. *See id.* at 217.

153. *See supra* notes 110–113 (discussing emissions trading programs).

154. For a discussion of the problems with the grandfathering system, see Chafe & French, *supra* note 111, at 96–97.

155. *Id.*

156. The grandfather system allows facilities that have polluted the most in the past to receive more credits than facilities that have already begun to implement more sustainable procedures. *Id.*

then those facilities will be forced to stop polluting or close. Because the auctioning process actually increases the price of polluting, it more effectively incentivizes facilities to transition to non-polluting, sustainable activities.

3. *Market Signals—Disclosure and Labeling Requirements*

More stringent disclosure requirements about environmental liabilities will provide better signals to governments, consumers, and investors about the sustainability of a company's practices. If investors realize that a company's practices are not sustainable or that they cannot afford to pay the actual costs of their activities, then they may avoid investing in the company. This will put pressure on companies to develop and use more sustainable technologies. Disclosure requirements could potentially include disclosing future regulatory and enforcement liabilities.¹⁵⁷

Labeling requirements are another way to signal consumers and investors about the sustainability of a corporation's practices. One of the difficulties faced in implementing sustainability is lack of consumer and investor knowledge. If governments develop labeling requirements, however, consumers and investors can more accurately compare companies and their products. For example, without any labeling requirements, two products may appear identical to a consumer. In reality, however, one product may have been produced in a country such as China that imposes much lower standards on production facilities. Governments could develop different labeling requirements for different products and for different unsustainable activities. For example, legislation has been proposed in Australia that would require energy labels for appliances. The proposed scheme would have labeling requirements for both energy efficiency and use of greenhouse gases.¹⁵⁸

C. *Environmental Index to Supplement GDP Reports*

Just as it is necessary for companies and individuals to internalize the true cost of their activities, it is necessary for governments to recognize the actual cost of their nation's economic development.¹⁵⁹ GDP does not incorporate the cost of economic development. Governments should use other indicators, such as a "Genuine Progress Indicator,"¹⁶⁰ that incorporate resource depletion and pollution in order to determine "national sus-

157. In many situations, GAAP and FASB do not require disclosure of future regulatory and enforcement liabilities. See Latham, *supra* note 57, at 695-97.

158. Murray Griffin, *Australia Considers Expanding Scope of Energy Efficiency, Labeling Scheme*, 32 INT'L ENV'T REP. 846 (Sept. 16, 2009).

159. See *supra* notes 106-110.

160. Talberth, *supra* note 87, at 22.

tainable development performance.”¹⁶¹ Under the GPI a nation’s GDP is adjusted downward to account for environmental degradation such as resource depletion and pollution.¹⁶² For example, in 2004, the United States’ GDP was nearly \$10.8 trillion, while its adjusted GPI was \$4.4 trillion.¹⁶³ Deductions included loss of wetlands, farmlands, and primary forest coverage, depletion of natural resources, carbon emissions damage, and ozone depletion.¹⁶⁴ Unlike GDP or GNP, GPI or a similar green economic indicator distinguishes between economic growth from a true increase in income and productivity and economic growth resulting from depleting “natural capital.”¹⁶⁵

D. Enforcing Sustainability on an International Level

Enforcing sustainability on an international level is one of the most difficult tasks in moving towards a sustainable society. When one country does not implement policies and programs to encourage sustainability, other countries’ efforts are stifled.¹⁶⁶ One solution some experts have proposed is shifting how emissions are reported. Instead of attributing emissions to the country where production occurs, emissions should instead be consumption based, requiring emissions be attributed to the country where the product was purchased.¹⁶⁷ Or, instead of abandoning the current system altogether, emissions could be reported in both a consumption based manner and a production based manner.

Another solution is to impose taxes on goods produced in countries with lower emissions standards or countries that opt out of international agreements.¹⁶⁸ The Senate recently considered climate legislation that would have given the President discretion in imposing tariffs on certain imports from countries that do not join a new international climate agreement.¹⁶⁹ However, that proposal, even if passed, would not have gone into effect until 2023.¹⁷⁰

161. *Id.*

162. *Id.* at 22–24.

163. *Id.*

164. *Id.*

165. See Tietenberg, *supra* note 40, at 197.

166. See *supra* notes 84–86; see also *OECD Orders Cost-Effective Action on Climate*, 32 INT’L ENV’T REP. 857 (Sept. 16, 2009) (OECD brief said developed countries should develop policies to reduce the transfer of emissions from one country to another.).

167. Wang & Watson, *supra* note 91, at 88.

168. *Id.* at 201–202.

169. See Dean Scott, *Senate Bill Would Give President Discretion Over Tariffs Related to Climate Change Agreements*, 41 ENV’T REP. 1125 (May 5, 2010) (explaining the bill as proposed in the Senate); GOVTRACK, *H.R. 2454: American Clean Energy and Security Act of 2009*, <http://www.govtrack.us/congress/bill.xpd?Bill=h111-2454> (explaining that the bill never became law).

170. *Id.*

Because consumers would be forced to pay higher taxes for certain products, this would force countries to internalize the actual cost of their consumption, rather than allowing them to export it to other nations. Corporations would not have as great an incentive to shift production to nations with lower emissions standards. OECD has argued against this, however, on the grounds that these taxes simply raise prices in the country imposing the tax and could trigger trade retaliation.¹⁷¹

While taxing certain imports could be an effective method of implementing sustainable development, there is a potential that such a bill would violate international trade rules, which prevent a country from taxing imports in a discriminatory manner.¹⁷² While the General Agreement on Tariffs and Trade (GATT) generally prohibits discriminatory taxes on imports, it does provide for an environmental exception, which allows a country to impose taxes on a product or ban a product altogether based on the environmental harm caused by the product.¹⁷³ This exception can only be met where the country imposes the same standard on similar products produced within its borders.¹⁷⁴ Additionally, the framework of Article XX of the GATT establishes this exception only as a defense once a prima facie case of a GATT violation has been made out by the complaining country.¹⁷⁵ It also provides very little guidance on the standards and requirements for meeting this exception. While the GATT does provide some framework for countries to prevent “leakage,” it is not an efficient or well established system for countries to use. For these reasons, few countries have used this as a defense to their methods of taxing imports, and many have avoided taxing in this manner altogether.

This exemplifies the need for international cooperation in reaching an agreement to reduce climate change. One method that may be necessary is revising international trade rules that prevent certain tariffs, and instead allow for exceptions in the climate change area.

V. CONCLUSION

As long as there continues to be a lack of environmental law on the international front, local and national efforts to solve the externality problem and impose the true costs of environmental damage on consumers and producers will be stifled. The effects of externalities can be curtailed on two fronts. First, existing international organizations, agreements, and treaties, like the GATT, need to provide a more structured framework that clearly

171. See *OECD Orders Cost-Effective Action on Climate*, *supra* note 99.

172. *Id.*

173. General Agreement on Tariffs and Trade, art. XX, Oct. 30, 1947, 61 Stat. A-11, 55 U.N.T.S. 194.

174. *Id.*

175. *Id.*

permits countries to create law, regulations, and taxes in a manner that will not be undermined by the lack of environmental efforts in other countries. Second, there needs to be an international agreement and accompanying organization which provides a central framework for developing, implementing, enforcing, and monitoring international agreements made in an effort to protect the environment. This agreement and organization also needs to establish a clear policy of allowing countries to regulate in the environmental law area in a manner that will not be undermined by countries who have failed to do so.

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