Development and Dissemination of Clean Cookstoves: A Model Law for Developed Countries*

Principal Editor: Scott Miller**

---

* This model law was developed at a legislative drafting workshop on July 12-13, 2012, entitled Drafting Model Laws on Indoor Pollution for Developing and Developed Nations, which was sponsored by the Center for Energy & Environmental Security and the *Colorado Natural Resources, Energy & Environmental Law Review* at the University of Colorado Law School in Boulder, Colorado.

** Scott Miller is a Visiting Assistant Professor at the University of Colorado Law School for the 2012-2013 academic year. He previously served as Senior Counsel for the U.S. Senate Committee on Energy and Natural Resources from 2003 to 2012. He has a J.D. from the University of Colorado Law School.

MODEL LAW

A BILL

To promote the development and deployment of clean cookstoves to save lives, improve livelihoods, empower women, and combat global warming by creating a thriving global market for clean, affordable, and efficient household cooking solutions, and for other purposes.

Be it enacted by the [legislative organ] of the [developed country] assembled,

§ 1. Short Title

This Act may be cited as the "Clean Cookstoves Support Act of 201[_]."

§ 2. Findings

[*Legislative organ*] finds that:

(1) [*Name of country*] is a member of the community of nations that has accepted well-recognized principles of international law and policy establishing—

(A) the right of developing countries to sustainable development; and

(B) the common but differentiated responsibility of [*name of country*] and other developed nations to institutionally, financially, and technologically support sustainable development among developing countries by alleviating energy poverty and providing access to safe and sustainable cooking technologies.

(2) [*Name of country*] seeks to support sustainable development and carry out its common but differentiated responsibility pertaining to energy poverty and access to safe and sustainable cooking technologies through this Act.

(3) According to the World Health Organization, approximately 3 billion people—nearly half of the world's population—cook their food over open fires or with inefficient, polluting, and unsafe cookstoves that use firewood, dung, or coal as fuel.

(4) An estimated 2 to 4 million people each year die prematurely from illnesses attributable to indoor air pollution resulting from inefficient, unsafe cookstoves. Indoor air pollution accounts for more deaths yearly than malaria, tuberculosis, or human immunodeficiency virus infection/acquired immunodeficiency syndrome (HIV/AIDS).

(5) Particulate matter, heavy smoke, and carcinogens created by inefficient cookstoves and open fires can cause chronic and acute illnesses, such as pneumonia, heart disease, and lung cancer. There also is evidence linking indoor air pollution to low birth weight, tuberculosis, and other types of cancer. Women and children are disproportionally affected because they are the main household members regularly breathing cooking smoke.

(6) Open fires and unsafe cookstoves lead to hundreds of thousands of burn deaths each year, and burn survivors often sustain permanent injuries ranging from debilitating scarring to loss of movement.

(7) Open fires are extremely inefficient at converting energy from biomass, so the amount of biomass required as fuel for cooking can reach up to 2 tons per family each year. Collecting this amount of fuel is time-consuming and environmental problems may result where demand for biomass exceeds the natural regrowth of resources.

(8) Women and girls disproportionately shoulder the burden of collecting and managing biomass fuel for cooking. As nearby fuel supplies dwindle, women and girls are forced to travel farther to obtain fuel, increasing their risk of injuries from carrying heavy loads long distances and of sexual harassment and assault. Furthermore, women and girls may spend 20 or more hours a week collecting fuel, leaving them with less time to attend school, fulfill domestic responsibilities, earn money, engage in public activities, learn to read, acquire other skills, or simply rest.

(9) Inefficient cookstoves contribute to global warming and environmental decline through deforestation and the release of black carbon, methane, nitrous oxide, and carbon dioxide into the atmosphere. Although biomass is primarily a renewable energy source, harvesting of unsustainable levels of biomass can lead to pressure on natural resources and eventually cause deforestation. Black carbon, methane, and nitrous oxide, produced through incomplete biomass fuel combustion, not only are dangerous when inhaled, but also are principal agents of global warming. Black carbon warms the atmosphere by decreasing the reflectivity of the earth's surface and has a significant impact in areas close to ice and snow accumulations. Additionally, black carbon contributes to extensive brown haze that can affect temperature and precipitation.

(10) The development and deployment of clean cookstoves is essential for achieving the United Nations Millennium Development Goals to reduce child mortality, improve maternal health, eradicate poverty, promote gender equality, and create environmental sustainability.

(11) Clean cookstoves positively impact the quality of life and the environment by—

(A) freeing women and children to engage in educational and economic endeavors;

(B) promoting gender equality and women's empowerment;

(C) improving child and maternal health and safety;

(D) advancing environmental stability by reducing reliance on biomass; and

(E) reducing contributions to global climate change.

§ 3. Policy

It is the policy of the [*name of country*] to create programs and policies to—

(1) encourage manufacturing industries for clean cookstoves in developing countries by supporting international partnerships and local entrepreneurs with financial, institutional, and technological assistance;

(2) encourage the promotion, distribution, and maintenance of clean cookstoves for individuals in developing countries;

(3) provide funding for research, development, and deployment of clean cookstoves and the necessary air quality monitoring systems for developing countries; and

(4) support and disseminate research and monitoring of the adverse human health and environmental effects associated with the black carbon and other pollutants emitted by inefficient cookstoves.

§ 4. Definitions

In this Act:

(1) CLEAN COOKSTOVE.—The term "clean cookstove" means a cookstove that—

(A) employs appropriate sustainable energy technologies;

(B) has been prototypically demonstrated, tested, and certified as meeting—

(i) indoor ambient air quality standards; or

(ii) if a developing country determines that indoor ambient air quality standards cannot be achieved, the reasonable interim air quality standards established by the developing country that improve existing indoor ambient air quality; and

(C) meets minimum durability standards based on the needs and conditions of such developing country and its peoples, taking into

account the available standards established by the Global Alliance for Clean Cookstoves.

(2) INDOOR AMBIENT AIR QUALITY STANDARDS.—The term "indoor ambient air quality standards" means airborne pollution measurements that do not exceed the following:

(A) For particulate matter of 10 μm (PM_{10})—

(i) a 24-hour mean of 50 $\mu g/m^3$; or

(ii) an annual mean of 20 $\mu g/m^3$.

(B) For particulate matter of 2.5 μm ($PM_{2.5}$)—

(i) a 24-hour mean of 25 $\mu g/m^3$; or

(ii) an annual mean of 10 $\mu g/m^3$.

(C) For carbon monoxide (CO)—

(i) 100 mg/m^3 during any 15-minute period and not more than 1 time per day;

(ii) 35 mg/m^3 during any 1-hour period and not more than 1 time per day;

(iii) an 8-hour mean of 10 mg/m^3; or

(iv) a 24-hour mean of 7 mg/m^3.

(D) For nitrogen dioxide (NO_2)—

(i) a 1-hour mean of 200 $\mu g/m^3$; or

(ii) an annual mean of 40 $\mu g/ m^3$.

§ 5. Clean Cookstove Manufacturing, Promotion, and Distribution

(a) IN GENERAL.—There is established within the [*ministry or agency for international aid*] a Clean Cookstove Manufacturing and Distribution Program.

(b) PURPOSE.—The purpose of the program established by subsection (a) is to provide international partnerships and local entrepreneurs with financial, institutional, and technological assistance to develop, manufacture, promote, distribute, and maintain clean cookstoves in developing countries.

(c) FUNDING.—

(1) IN GENERAL.—The program established by subsection (a) shall be funded in the amount of $15,000,000 each year for 10 years.

(2) CRITERIA.—The administrator of the program established by subsection (a) shall establish criteria for the use of funds provided by paragraph (1) to carry out the purpose of the program.

(3) CONSULTATION.—The criteria established under paragraph (2) shall be developed in consultation with—

(A) governmental and community leaders in developing countries;

(B) non-governmental organizations working to promote clean cookstoves;

(C) [*other relevant ministries or agencies within the developed country*]; and

(D) the interested public.

(4) NOTICE AND COMMENT.—The administrator of the program established by subsection (a) shall provide public notice and an opportunity for any interested government, business, organization, or individual to comment on any proposal to establish criteria under paragraph (2) or amendments thereto.

(5) AVAILABILITY OF FUNDS.—The funding provided by paragraph (1) shall be available to any offices or programs within the [*appropriate agency or agencies within the ministry for international aid*] in accordance with—

(A) the criteria established under paragraph (2); and

(B) such other rules as are established by the [*minister or agency head*].

(6) GRANTS AND OTHER AID.—The program established by subsection (a) may, in accordance with the criteria established under paragraph (2) and without the need for any matching or base funds, use up to 20 percent of the funding provided by paragraph (1) to provide grants, loans, or other methods of financial support to businesses and other non-governmental organizations working to develop, manufacture, promote, distribute, or maintain clean cookstoves in developing countries.

(d) MONITORING; REPORTING.—The administrator of the program established by subsection (a) shall—

(1) monitor the effectiveness of the program; and

(2) report every 5 years after the date of enactment of this Act to the [*appropriate developed country officials and entities*] and the public on the effectiveness of the activities supported by and carried out under the program.

(e) ACCOUNTING.—The administrator of the program established by subsection (a) shall account for the funds it receives and distributes. The accounting shall comply with generally accepted accounting principles and shall be made available to the [*appropriate developed country*

officials and entities] and the public within 90 days of the end of each fiscal year.

§ 6. Applied Research and Development

(a) IN GENERAL.—There is established within the [*ministry or agency for applied energy research and design*] a Clean Cookstove Research, Development, and Demonstration Program.

(b) PURPOSE.—The purpose of the program established by subsection (a) is to enable and facilitate the research, development, testing, and demonstration of—

(1) effective and efficient appropriate sustainable energy technologies that provide alternatives to the use of damaging biomass cooking;

(2) alternative fuels; and

(3) efficient and effective clean cookstoves.

(c) FUNDING.—

(1) IN GENERAL.—The program established by subsection (a) shall be funded in the amount of $15,000,000 each year for 10 years.

(2) CRITERIA.—The administrator of the program established by subsection (a) shall establish criteria for the use of funds provided by paragraph (1) to carry out the purpose of the program.

(3) CONSULTATION.—The criteria established under paragraph (2) shall be developed in consultation with—

(A) domestic and international businesses, academic institutions, and non-profit institutions that are developing or are interested in the research, development, testing, or demonstration of clean cookstoves;

(B) [*other relevant ministries or agencies within the developed country*]; and

(C) the interested public.

(4) NOTICE AND COMMENT.—The administrator of the program established by subsection (a) shall provide public notice and an opportunity for any interested government, business, organization, or individual to comment on any proposal to establish criteria under paragraph (2) or amendments thereto.

(5) AVAILABILITY OF FUNDS.—The funding provided by paragraph (1) shall be available to any offices or programs within the [*ministry or agency for applied energy research and design*] in accordance with—

(A) the criteria established under paragraph (2); and

(B) such other rules as are established by the [*minister or agency head*].

(6) GRANTS AND OTHER AID.—The administrator of the program established by subsection (a) may, in accordance with the criteria established under paragraph (2) and without the need for any matching or base funds, use up to 80 percent of the funding provided by paragraph (1) to provide grants, loans, or other methods of financial support to academic, business, and other non-governmental entities for research, development, testing, or demonstration of clean cookstoves.

(d) MONITORING; REPORTING.—The administrator of the program established by subsection (a) shall—

(1) monitor the effectiveness of the program; and

(2) report every 5 years after the date of enactment of this Act to the [*appropriate developed country officials and entities*] and the public on the effectiveness of the activities supported by and carried out under the program.

(e) ACCOUNTING.—The administrator of the program established by subsection (a) shall account for the funds it receives and distributes. The accounting shall comply with generally accepted accounting principles and shall be made available to the [*appropriate developed country officials and entities*] and the public within 90 days of the end of each fiscal year.

§ 7. Health and Environmental Research

(a) IN GENERAL.—There is established within the [*ministry or agency for health or environmental research*] a Clean Cookstove Health and Environmental Research Program.

(b) PURPOSE.—The purpose of the program established by subsection (a) is to—

(1) conduct and support research and monitoring on the household, local, and global production of black carbon and other pollutants emitted by inefficient cookstoves;

(2) conduct and support research and monitoring on the adverse human health and environmental effects associated with the black carbon and other pollutants emitted by inefficient cookstoves;

(3) research and develop best practices and programs to reduce the adverse human health and environmental effects associated with black carbon and other pollutants through the use of clean cookstoves; and

(4) inform governments, researchers, and the public of the research, monitoring, best practices, and programs developed under paragraphs (1) through (3).

(c) FUNDING.—

(1) IN GENERAL.—The program established by subsection (a) shall be funded in the amount of $15,000,000 each year for 10 years.

(2) CRITERIA.—The administrator of the program established by subsection (a) shall establish criteria for the use of funds to conduct the research, monitoring, and other activities described in subsection (b).

(3) CONSULTATION. The criteria established under paragraph (2) shall be developed in consultation with—

(A) domestic and international businesses, academic institutions, and non-profit institutions that are interested in reducing the adverse health and environmental effects of inefficient cookstoves;

(B) domestic and international businesses, academic institutions, and non-profit institutions that are developing or are interested in the development of clean cookstoves;

(C) the [*other relevant ministries or agencies within the developed country*]; and

(D) the interested public.

(4) NOTICE AND COMMENT.—The administrator of the program established by subsection (a) shall provide public notice and an opportunity for any interested government, business, organization, or individual to comment on any proposal to establish criteria under paragraph (2) or amendments thereto.

(5) AVAILABILITY OF FUNDS.—The funding provided by paragraph (1) shall be available to any offices or programs within the [*ministry or agency for applied energy research and design*] in accordance with—

(A) the criteria established under paragraph (2); and

(B) such other rules as are established by the [*minister or agency head*].

(6) GRANTS AND OTHER AID.—The administrator of the program established by subsection (a) may, in accordance with the criteria established under paragraph (2) and without the need for any

matching or base funds, use up to 80 percent of the funding provided by paragraph (1) to provide grants, loans, or other methods of financial support to academic and other non-governmental entities for the health and environmental research, monitoring, and other activities described in subsection (b).

(d) MONITORING; REPORTING.—The administrator of the program established by subsection (a) shall—

(1) monitor the effectiveness of the program; and

(2) report every 5 years after the date of enactment of this Act to the [*appropriate developed country officials and entities*] and the public on the effectiveness of the activities supported by and carried out under the program.

(e) ACCOUNTING.—The administrator of the program established by subsection (a) shall account for the funds it receives and distributes. The accounting shall comply with generally accepted accounting principles and shall be made available to the [*appropriate developed country officials and entities*] and the public within 90 days of the end of each fiscal year.

COMMENTARY

Introduction[1]

The Clean Cookstoves Support Act is a model law publicly made available for legislative adoption and enactment by developed countries committed to addressing the needs of the 3 billion people who lack access to clean energy for cooking. The model law initiative, and public offering, is based on a foundational jurisprudential premise that needs elucidation.

Jurisprudentially, law is a normative construct that can and should respond to social problems. Law is an "instrument," "tool," "machine," or "engine" for serving or achieving social objectives, and achieving practical aims.[2] Robert Summers, in discussing the use of the machinery of law to achieve socio-economic objectives, saw it as a particularly American form of legal theory spawned by theorists like Oliver Wendall Holmes, Roscoe Pound, John Dewey, John Chipman Gray, Karl Llewellyn, Walter Wheeler Cook, and Felix Cohen.[3] Summers coined the phrase "pragmatic instrumentalism" to describe how these theorists created a theory of adjudication[4] focused on the role of judges in shaping and molding law to achieve social means or ends.

The use of law for social engineering has much longer lineage beginning with the British philosopher, jurist, and social reformer Jeremy Bentham (1748-1832). Bentham, perhaps best known for his utilitarian philosophy, was also an English legal revolutionary who re-drew the contours of law. In doing so he re-created a vastly expanded domain of law in a way that had not hitherto been done. He called for a complete, comprehensive, and integrated *legislative* re-envisioning of the existing system of law and government. Bentham expounded the necessity for a new "form" of law that laid the foundations of a reformed society, in which the "whole of the community's social system no less than the community's legal system was to be located analytically within the

---

1. The Introduction to the commentary is based upon and reproduces parts of Lakshman Guruswamy, *Drafting Model Laws on Indoor Pollution for Developing and Developed Nations Workshop, July 12-13, 2012, Boulder, CO: Introduction*, 24 COLO. NAT. RESOURCES, ENERGY & ENVTL. L. REV. 319 (2013).

2. ROBERT SUMMERS, INSTRUMENTALISM AND AMERICAN LEGAL THEORY 20 (1982).

3. *Id*. at 11; *see generally id.* chs. 2 & 12.

4. MICHAEL S. MOORE, EDUCATING ONESELF IN PUBLIC: CRITICAL ESSAYS IN JURISPRUDENCE 194 (2000).

province of legislation."[5] Moreover, he explicated how to design, draft, implement, and generally use legislation to achieve the social objectives of the new kind of law he was calling for. The vast and theretofore shapeless socio-political expanse envisioned by him had to be legislatively mapped and populated, and become part of a great reformist enterprise based on a new concept of law.

What we are trying to do in this model law is based on Benthamite jurisprudence. This draft model law could be enacted by the legislatures of developed countries while its companion model law could be enacted by developing countries. Legislatures enacting these model laws will be adopting problem-solving legislation that falls within the compass of law envisioned by Bentham. For example, the model law for developing countries is actually a blueprint for the national dissemination of clean cookstoves.[6] It offers a carefully constructed foundation which will ensure that the national enterprise of installing cookstoves is successfully undertaken. Similarly, the model law for developed countries commits them to take practical steps in pursuance of providing developing countries and peoples with access to clean energy for cooking.[7]

Both developed and developing nations adopting a model law, or variations of it, will be using the machinery of law to achieve the compelling social objective of combating indoor air pollution and global warming. From a global perspective, the enterprise of law encompasses public international as well as national laws. When adopted or enacted, model laws will become municipal or national legislation, as contrasted to international treaties. The use of a national legislation to address an international problem requires explanation.

Public international law is the law that creates and governs inter-state (or country) relationships, primarily through contracts called treaties, conventions, and protocols. It is possible for the 192 countries in the world to come together as a lawmaking assembly with a view to negotiating and drafting a global treaty to address indoor air pollution. This is what happened with climate change and biodiversity. Under the international law approach to indoor air pollution, it is also possible for countries to enter into less ambitious regional multilateral treaties governing regions identified by trade or geo-politics. It is also possible for one country to enter into a bilateral agreement with another country.

---

5. DAVID LIEBERMAN, THE PROVINCE OF LEGISLATION DETERMINED 287 (1989).

6. *See generally* Lakshman Guruswamy, Principal Editor, *Development and Dissemination of Clean Cookstoves: A Model Law for Developing Countries*, 24 COLO. NAT. RESOURCES, ENERGY & ENVTL. L. REV. 331 (2013).

7. *Id.*

But given the ubiquitous nature of indoor air pollution, and the need for both developed and developing country responses, the treaty or public international law track probably calls for a multilateral global treaty.

But it is becoming evident that large international treaties or conventions of this kind are exceptionally difficult to negotiate, and even more resistant to implementation and enforcement. Despite tremendous diplomatic- and media-backing, the faltering negotiation of a treaty to replace the Kyoto Protocol is strong evidence of this backing away from large multilateral treaties. Moreover, the search for consensus between different legal traditions is not an easy enterprise. Some commentators claim that international treaties and conventions are inevitably and confessedly drafted as multi-cultural compromises between different schemes of law. Consequently they will normally have less merit than most of the individual legal systems from which they have been derived.[8]

Another way of looking at legal answers to a global problem is through the lens of domestic or municipal legal systems. The numerous developing and least developed countries in the world that are suffering from indoor air pollution could respond to it through domestic or municipal laws. Many of these countries have other pollution laws dealing with differing aspects of atmospheric pollution, water pollution, and hazardous waste. Such pollution control laws are enacted by national legislatures. What this model law seeks to do is to expand the vision of national pollution and health legislation by including indoor air pollution.

This model law generally fits within the framework of the United Nation's practice regarding model laws. As the United Nations Commission on International Trade Law describes:

> A model law is a legislative text that is recommended to states for enactment as part of their national law. . . . A model law is an appropriate vehicle for modernization and harmonization of national laws when it is expected that States will wish or need to make adjustments to the text of the model to accommodate local requirements that vary from system to system, or where strict uniformity is not necessary or desirable. It is precisely this flexibility which makes a model law potentially easier to negotiate than a text containing obligations that cannot be altered, and can promote greater acceptance of a model law than of a convention dealing with the same subject matter. Notwithstanding this flexibility, in order to increase the likelihood of achieving a satisfactory degree of unification and to provide certainty about the extent of unification, States are encouraged

8. J.S. Hobhouse, *International Conventions and Commercial Law: the Pursuit of Uniformity*, 106 L. Q. REV. 530, 533 (1990).

> to make as few changes as possible when incorporating a model law into their legal systems.[9]

Clean Cookstoves and the Role of Developed Countries

The jurisprudential premise finds practical expression in this model law. It establishes avenues for developed countries to provide technical, institutional, and financial support for the needed global effort to provide the approximately 3 billion people who lack efficient, affordable, and safe cookstoves. Recognizing the magnitude of the challenge, these programs are intended to complement the efforts of other governments and non-governmental organizations in addressing these critical needs. Whether the legislation is seen as a means to implement pledges for international aid, to carry out the common but differentiated responsibility of developed nations to support sustainable development in developing countries, or to pursue other strategic or ethical agenda, developed country engagement in the effort should be recognized as obligatory and indispensable.

International organizations such as the World Health Organization, the World Bank, and the United Nations have recognized the need to develop and promote improved cookstove designs in countries where open fires and inefficient cookstoves are prevalent. The World Bank and United Nations have formed alliances with private companies, government entities, and non-governmental organizations to bring biomass cookstove issues to the agenda of international development agencies and donors.[10]

Many countries are participating in the cause and have contributed funding and resources to develop and promote clean cookstoves. For example, the United States has committed a total of up to $105,000,000 over the first five years of its Global Alliance to help it achieve its goal of spurring development for and adoption of clean cookstoves in

9. U.N. COMM'N ON INT'L TRADE LAW, A GUIDE TO UNCITRAL: BASIC FACTS ABOUT THE UNITED NATIONS COMMISSION ON INTERNATIONAL TRADE LAW 14-15 (2013), *available at* http://www.uncitral.org/pdf/english/texts/general/12-57491-Guide-to-UNCITRAL-e.pdf.

10. THE WORLD BANK, HOUSEHOLD COOKSTOVES, ENVIRONMENT, HEALTH, AND CLIMATE CHANGE: A NEW LOOK AT AN OLD PROBLEM 28 (2011), *available at* http://climatechange.worldbank.org/sites/default/files/documents/Household%20Cookstoves-web.pdf [hereinafter A NEW LOOK].

100,000,000 households by 2020.[11] This amount includes contributions from the U.S Agency for International Development, the Environmental Protection Agency, the National Institutes of Health, the Centers for Disease Control and Prevention, and the Department of Energy to accomplish such goals as—

- raising public awareness of cookstoves around the world;
- funding field assessments to better understand the relationship between climate change and improved cookstoves;
- initiating programs to convert commercial vendors to clean cookstoves;
- disseminating clean and efficient cookstoves;
- performing lab and field testing;
- supporting health research studies targeting respiratory, cancer, and cardiovascular risks;
- developing field training programs for research on cookstoves; and
- hosting global workshops to advance designs for affordable, durable, and safe biomass cookstoves with high efficiency and low emissions.[12]

Germany, Kenya, Rwanda, and many other countries also have committed capital and resources to establish facilities for testing and developing technology for cookstove heat recovery and biomass gasification, to disseminate improved clean cookstoves and charcoal production techniques, and to otherwise support the development and deployment of clean cookstoves.[13]

However, these current efforts fall far short of what is necessary to bring clean cookstove technology to the billions of energy poor. Financial, institutional, technological, and research support for clean cookstoves enjoy a track record of proven success, but such efforts have lacked the scale and engagement that is necessary for adequate progress. There simply is no established international funding mechanism or body that can collect, deliver, and implement all of the resources necessary to

11. *The United States Commits up to $55 Million in Additional Funding to Global Alliance for Clean Cookstoves: Media Note*, U.S. DEP'T OF STATE (Sep. 22, 2011), http://www.state.gov/r/pa/prs/ps/2011/09/173773.htm.

12. U.S. DEP'T OF STATE, THE UNITED STATES COMMITMENT TO THE GLOBAL ALLIANCE FOR CLEAN COOKSTOVES: YEAR ONE PROGRESS REPORT (2011), http://www.state.gov/r/pa/prs/ps/2011/09/173774.htm.

13. *See Partners*, GLOBAL ALLIANCE FOR CLEAN COOKSTOVES, http://community.cleancookstoves.org/partners/category/13 (last visited Mar. 21, 2013).

combat this challenge. The adoption and implementation of the model law will have a significant positive impact on human health and welfare, the environment, and the economy at both local and global scales.

The model law provides a flexible platform from which to best leverage the capacities and interests of the adopting country in promoting the deployment of clean cookstoves. For example, an adopting country may determine that two or more of the recommended programs should be combined for maximum effectiveness and efficiency. Developed countries also can successfully channel financial and other support through other mechanisms. For example, developed countries may enter into bilateral or multilateral agreements with developing countries to directly support their programs to manufacture, promote, distribute, and maintain clean cookstoves. Funding also can be contributed to entities such as the Global Alliance for Clean Cookstoves, the United Nation's Green Climate Fund, or other established organizations, partnerships, and funds that support the development and deployment of clean cookstoves.

Funding such efforts is, of course, a fundamental challenge for developing and developed countries alike. The model legislation relies on traditional financial appropriations for the clean cookstove programs it authorizes. Adopting countries also are encouraged to develop more creative approaches to funding such efforts, such as through debt financing; tax, tariff, or trade benefits; and revenue production.

Using limited funding with maximum efficiency is an imperative. It is important for developed countries to understand and coordinate with the efforts of other developed and developing countries and the non-governmental organizations that are working on clean cookstove needs. The Global Alliance for Clean Cookstoves can provide helpful support for such efforts. Adopting countries also should be aware that some clean cookstove projects have failed due to lack of quality control and reliance on short-term financing instead of long-term business growth through market development, for example.[14] As a result, adopting countries should carefully dedicate their financial contributions to ensure that they meet the needs of the target population, that they promote effective market and social mechanisms to develop and deploy clean cookstoves, and that the programs and projects they support are carefully monitored and adapted for effectiveness.

14. A NEW LOOK, *supra* note 10, at 15.

Section-by-Section Analysis

Section 1. Short Title

Section 1 provides the short title for the model legislation.

Section 2. Findings

The model legislation provides a series of findings and lays the foundation for establishing the programs described in sections 4 through 6. The findings are based on generally and internationally available evidence,[15] and they justify both an individual and collective response from developed countries.

Section 3. Policy

Section 3 describes the basic policies generated by the model law.

Section 4. Definitions

Section 4 provides important definitions for a "clean cookstove" and "indoor ambient air quality standards." Paragraph (1) includes three important components of the definition of a "clean cookstove." First, the

---

15. *See Indoor Air Pollution and Health: Fact sheet No. 292*, WORLD HEALTH ORG., (Sept. 2011), http://www.who.int/mediacentre/factsheets/fs292/en/ (Findings 3, 4 & 5); Stephen S. Lim, et al., *A Comparative Risk Assessment of Burden of Disease and Injury Attributable to 67 Risk Factors and Risk Factor Clusters in 21 Regions, 1990-2010: A Systematic Analysis for the Global Burden of Disease Study 2010*, 380 LANCET 2224, 2238, 2240-41 (2012) (finding that household air pollution from solid cooking fuels directly caused 3.5 million premature deaths and 500,000 deaths through its contribution to outdoor air pollution in 2010, the largest number of deaths and disability-adjusted-life-years caused by any environmental health risk factor) (Finding 4); GLOBAL ALLIANCE FOR CLEAN COOKSTOVES, IGNITING CHANGE: A STRATEGY FOR UNIVERSAL ADOPTION OF CLEAN COOKSTOVES AND FUELS 10 (Nov. 2011), *available at* http://www.cleancookstoves.org/resources/fact-sheets/Igniting_Change.pdf (Findings 4 & 10); *Number of Deaths due to HIV/AIDS*, WORLD HEALTH ORG., http://www.who.int/gho/hiv/epidemic_status/deaths/en/index.html (last visited Mar. 5, 2013) (reporting that an estimated 1.7 million people died of AIDS related illnesses worldwide in 2011) (Finding 5); A NEW LOOK, *supra* note 8 (Findings 5, 7, 9); *The Issues: Health*, GLOBAL ALLIANCE FOR CLEAN COOKSTOVES, http://www.cleancookstoves.org/our-work/the-issues/health-impacts.html (visited Mar. 5, 2013) (Finding 6); U. N. WOMENWATCH, FACT SHEET: WOMEN, GENDER EQUALITY AND CLIMATE CHANGE (2009), *available at* http://www.un.org/womenwatch/feature/climate_change/downloads/Women_and_Climate_Change_Factsheet.pdf (Finding 8).

definition references "appropriate sustainable energy technologies" ("ASETs"). ASETs "seek to bridge the gap between the capital-intensive advanced technologies of the developed world and the traditional subsistence technologies of the [energy poor]."[16] In the context of cookstoves, ASETs include relatively simple technologies that satisfy basic cooking needs through sustainable engineering tailored to the particular environmental, ethical, cultural, social, political, and economic needs of the community for which they are intended.[17]

Second, the definition emphasizes the importance of testing, demonstrating, and certifying cookstoves as meeting or exceeding indoor ambient air quality standards to ensure that the cookstoves developed countries support will achieve the intended human health and environmental benefits in developing countries. The recommended standards are substantively incorporated within the definition of "indoor ambient air quality standards." In some cases, achieving the specified standards may not be immediately achievable or best suited to the near-term needs of a particular developing country or community. In that case, the definition recognizes the need to tailor the standards, through coordination with the developing country, to best serve the developing country and its communities.

Third, the definition provides for the establishment of minimum durability standards. Experience has demonstrated that cookstove durability is a critical component for the long-term success of any clean cookstove deployment program.

Paragraph (2) defines "indoor ambient air quality standards," setting forth standards for particulate matter,[18] carbon monoxide,[19] and nitrogen dioxide[20] recommended by the World Health Organization.

---

16. Lakshman Guruswamy, *Energy Poverty*, 36 ANN. REV. ENVT. & RESOURCES 139, 141 (2011).

17. *See id.* at 146.

18. *See Air Quality and Health Fact Sheet No. 313*, WORLD HEALTH ORG. (Sept. 2011), http://www.who.int/mediacentre/factsheets/fs313/en/index.html; *see also* WORLD HEALTH ORG., AIR QUALITY GUIDELINES FOR PARTICULATE MATTER, OZONE, NITROGEN DIOXIDE AND SULFUR DIOXIDE: GLOBAL UPDATE 2005—SUMMARY OF RISK ASSESSMENT 9 (2006), *available at* http://www.who.int/phe/health_topics/outdoorair/outdoorair_aqg/en/index.html; WORLD HEALTH ORG., WHO GUIDELINES FOR INDOOR AIR QUALITY: SELECTED POLLUTANTS 4 (2010), *available at* http://www.euro.who.int/__data/assets/pdf_file/0009/128169/e94535.pdf [hereinafter 2010 GUIDELINES] ("[T]he air quality guidelines for particulate matter recommended by the 2005 global update are also applicable to indoor spaces and a new review of the evidence is not necessary at present." (endnote omitted)).

Section 5. Clean Cookstove Manufacture, Promotion, and Distribution

Section 5 establishes a program to support the development, manufacturing, promotion, and distribution of clean cookstoves in developing countries. An adopting country may find that an existing office, agency, or program has the appropriate capacities to carry out the program; in other cases, a new program or office may best serve the goals of the model legislation. In either case, the best course is likely to avoid duplication and leverage existing administrative infrastructure to support the implementation of clean cookstove development, manufacturing, promotion, and distribution projects in developing countries.

The model legislation recommends $15,000,000 annually to carry out the Clean Cookstove Manufacturing and Distribution Program. The adopting country may consider more or less funding; the recommended amount provides a realistic example of the amount of funding that is needed to address the challenge, assuming that it is multiplied both by numerous developed countries and through the multi-program approach envisioned by this model law. In establishing criteria for the use of the funds, the model law calls for opening the process to the participation of all interested persons and entities, regardless of nationality. Doing so will encourage and support input by communities who may receive the assistance to help ensure that the rules governing the assistance are designed to effectively and efficiently reach their goals.

It is contemplated that a majority of the funds for this program would support governmental entities in developing countries. Such support is needed, for example, to carry out the programs recommended by the model law for developing countries.[21] Significant funding also can be used successfully in partnership with businesses and non-governmental organizations.

The model law also calls for significant and transparent monitoring, reporting, and accounting. Such practices are important for establishing and maintaining an effective and efficient international aid program of the kind that is called for here.

---

19. 2010 GUIDELINES, *supra* note 18, at 87.

20. *Id.* at 248.

21. *See generally* Guruswamy, *supra* note 6.

Section 6. Applied Research and Development

Section 6 establishes a program to support applied research and development of effective, efficient, and affordable clean cookstove technologies. There is a critical need for significant advancements in appropriate and sustainable clean cookstove technologies. Successfully developing such technologies will require not only investments in materials research and engineering, but also in testing, certification, sociology, and cultural anthropology, for example.

As with the program established under section 5, an adopting country should consider existing administrative infrastructure to minimize duplication and maximize efficiency; encourage and support input by the target communities; and establish significant and transparent administrative practices to ensure effectiveness and efficiency in carrying out the Clean Cookstove Research, Development, and Demonstration Program.

Unlike the program established under section 5, the program established by section 6 contemplates that a large portion of the research and development funding will be used to support non-governmental efforts. This recommendation is based on the recognition that the most common structure for carrying out such research and development efforts is through public-private partnerships, which often provide the most efficient and effective approach to the kind of program that is contemplated here.

Section 7. Health and Environmental Research

Section 7 establishes a program to (1) conduct and support research and monitoring on the pollutants that are produced by inefficient cookstoves; (2) conduct and support research and monitoring on the adverse human health and environmental effects associated with such pollution; (3) research and develop best practices and programs to reduce those adverse human health and environmental effects; and (4) inform governments, researchers, and the public of the research, monitoring, best practices, and programs developed through the program established by this section.

The Clean Cookstove Health and Environmental Research Program responds to a broad range of research and monitoring needs—from cookstove-related impacts on the individual to those on the global atmosphere. The effective dissemination of the results of such research and monitoring—and the best practices and programs that are developed as a result—is an important component of the program established by this section. Adopting countries must work with both developed and developing countries and communities to ensure that the energy poor

benefit from the investments and advances that are made through this program.

As with the programs established under sections 5 and 6, an adopting country should consider existing administrative infrastructure to minimize duplication and maximize efficiency, encourage and support input by the affected communities, and establish significant and transparent administrative practices to ensure effectiveness and efficiency. And as with the program established under section 6, the model legislation calls for a large portion of the research and development funding to be used to support public-private partnerships.