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Viewpoint

The Moral Imperative of Clean Household Energy

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The world's poor and low-income countries need greater access to modern energy solutions, including clean-burning fossil fuels for household use.

BY THOMAS MATTE

Clean air to breathe, like safe drinking water, is essential for human health and well-being. A prerequisite for healthy indoor air is clean, modern household energy. While this has been available for generations to nearly all who live in wealthy countries, billions of people in low- and middle-income countries worldwide live in households dependent on polluting fuels for cooking, heating, and lighting. These unhealthy fuels include coal, wood, charcoal, other biomass fuels, and kerosene. As a result, an estimated 2.9 million annual deaths globally are caused by household exposure to smoke pollution—substantially more than are caused by lack of access to safe drinking water and sanitation.

The crushing global health burden of household air pollution creates a moral imperative for urgent action. But current global investments in expanding access to clean household energy lag far behind what is needed. While annual global investment in renewable energy exceeded $300 billion from 2011 through 2016, in 20 high-need countries where more than 80 percent of the global population without access to clean cooking live, a cumulative $600 million was invested in development finance for clean cooking fuels and technologies between 2002 and 2015. This rate of investment is less than 1 percent of the estimated $4.4 billion annually needed to achieve universal access to clean cooking by 2030. As a result, the total global population still dependent on solid fuels for cooking—about 3 billion people—has not decreased in recent years. A larger and more focused allocation of public, private, and philanthropic resources is required.

I propose three principles to guide these resource-allocation decisions. First, household energy solutions should be chosen primarily based on their potential to improve the health and well-being of those living without clean household energy, the overwhelming majority of whom are living in poverty or in low- and middle-income countries. Second, rather than assuming that all fossil fuels are worse than alternatives in terms of climate and other environmental impacts, all energy options, including fossil fuels, biomass fuels, and biofuels, should be evaluated objectively through realistic life cycle analyses of their effects on emissions of all climate pollutants and loss of carbon sequestering land cover. Third, access to healthier, proven, available, and scalable solutions should be expanded as rapidly as possible, with support from development financing to include subsidies where needed.

Based on these principles, expanding access to liquefied petroleum gas (LPG) should be one of the central near-term strategies in reducing the harm from household air pollution. Investments in solid biofuel solutions should be limited to places where it is not feasible to rapidly scale cleaner fuels and technologies.

ILLUSTRATION BY CRISTÓBAL SCHMAL

THE ADVANTAGES OF LPG

Improved biomass stoves have been developed in an attempt to improve efficiency and reduce emissions of harmful pollutants. But this strategy has not been effective for reducing health risks from solid-fuel use: Improved biomass stoves developed to date do not meet health-based emission guidelines, according to the best available science.

Only electric stoves or those burning certain clean fuels, such as LPG, biogas, piped natural gas, and ethanol, have sufficiently low emissions to prevent a substantial share of the health harm from household air pollution. Biomass-stove emissions have generally been found to be far greater in real-world household use than under controlled laboratory conditions using fuels chosen to optimize performance, because of suboptimal maintenance and fuel that varies in quality and moisture content.

For protecting the environment from climate change and other threats such as deforestation, one might assume that a potentially renewable fuel such as wood is preferable to LPG. But this assumption is flawed, because in countries heavily reliant on wood for fuel, much, and in some cases most, biomass fuels are not renewably produced, nor are they necessarily low-carbon alternatives to fossil fuels. To be sure, improved biomass stoves will remain a

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needed interim solution for some communities to reduce their wood fuel use until clean, modern energy is accessible and affordable for them. But providing biomass stoves should not come at the expense of focusing wherever feasible on providing cleaner household energy solutions.

LPG has the added advantage of being best suited to scale up rapidly, because it is easily transported and stored, and global supplies are abundant. In contrast to improved biomass stoves, LPG cookstoves are generally simple and reliable, and LPG fuel quality is much more consistent than biomass. In addition, use of LPG reduces cooking time substantially and avoids the costs of time and safety risks to women who forage for wood or other fuel sources. On health and welfare grounds alone, LPG, a fossil fuel, is far superior to biomass fuel burned in improved stoves currently available.

Neither electricity grids nor low-carbon renewable energy can be expanded rapidly enough to meet the need for both clean household energy and rapidly rising overall energy demand in developing countries over the next 10 years. In contrast, the scalability of LPG is evident in a global market already serving three billion people, and the feasibility of rapid expansion of LPG access has recently been demonstrated. For example, Indonesia converted 40 million households from kerosene to LPG for cooking in just five years, between 2007 and 2012. India is in the midst of an especially ambitious expansion with the goal of providing LPG access to 60 million poor households (approximately 300 million people) in three years.

For wealthy as well as low- and middle-income countries, LPG can be an essential source of clean, modern household energy during a time of transition to a low-carbon energy future. The global trend of rapid urbanization and economic development can facilitate progress, as growing urban and peri-urban populations enter the cash economy and are more easily connected to electricity grids and LPG distribution systems. The growing population of middle-class urban dwellers, even if they already have access to modern energy, are increasingly demanding action to improve ambient air quality. They can become an important source of political pressure for expanding clean household energy, if made aware of the impact of upwind household solid fuel use on ambient air quality where they live.

PLANNING A HEALTHIER FUTURE

Rapidly expanding access to LPG with sustained, high levels of use requires planning, policies, and investments. There are plenty of lessons to apply from past unsuccessful as well as successful efforts to scale up LPG use sustainably by developing countries. Unsuccessful efforts have involved an unreliable fuel supply, upfront costs, and safety concerns that undermined uptake and sustained use of LPG as a clean fuel. Successful efforts have involved national planning with multiple government agencies, civil society, and private sector actors, as well as new or expanded national LPG market supply chains that deliver LPG safely, reliably, affordably, and sustainably to households at scale. These national supply chains include import terminals, fuel storage networks, and cylinder filling and distribution networks. Finally, sound policy and well-enforced regulation, based on best practices, are essential prerequisites, and safe adoption and ongoing use of LPG can be increased with effective consumer education. In some areas, subsidies, mobile payment, and financing mechanisms are needed to support the purchase of stoves and fuel to make them affordable to very low-income consumers.

For low- and middle-income countries with large populations still dependent on solid fuels, aspirational goals for reductions in fossil fuel use need not and must not slow near-term progress on expanding access to clean household energy, including LPG. For many low- and middle-income countries aspiring to increase LPG access, one barrier to faster progress is the limited amount of development financing relative to the need. For example, the clean development mechanism established by the UN Framework Convention on Climate Change (UNFCCC) cannot be used to support projects to replace biomass fuel with LPG or other fossil fuels. And the Private Financing Advisory Network, an influential advisor for clean energy investors in cooperation with UNFCCC, has several biomass projects in its pipeline, but none for LPG or other clean household energy solutions. No major philanthropic funding has arisen to fill the gap in addressing this urgent problem.

Environmental advocates can influence funding priorities, for worse or better. Some environmental organizations oversimplify energy policy options, opposing any and all fossil-fuel-based solutions while supporting vaguely defined "clean" or "renewable energy" solutions as capable of rapid scaling to meet growing energy needs. This framing ignores the fact that fossil fuels vary widely in their impacts on health and climate and that some non-fossil biofuels are more harmful to human health and the climate than some fossil fuels. In contrast, other environmental organizations take a more pragmatic position, opposing continued coal use while acknowledging the role of the cleanest fossil fuels, such as natural gas (with measures to mitigate its environmental impacts), in the transition to truly low-carbon, clean, and renewable energy.

Rapid gains in clean household energy promise large health benefits. To realize them, government health ministries should collaborate with energy, environment, and finance ministries in energy policy and planning to ensure that health considerations are taken into account. Nongovernmental organizations, advocates, and donors focused on public health, human rights, and environmental protection should also work to support governments in avoiding preventable, cumulative health damage from household pollution now, while reducing committed greenhouse gas emissions and deforestation compared with the status quo. That means greater investments today in technical assistance, infrastructure, and market reforms needed to accelerate access to cleaner energy and fuels. ■