

Powering the Millennium Development Goals: Developed Countries Need to Step Off the Gas

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ABSTRACT

Climate change is a major obstacle to the poverty alleviation program set out by the Millennium Development Goals (MDGs). The world's poor already suffer most from environmental degradation. In terms of health, this translates to a higher burden of preventable disease, caused primarily by a lack of access to sanitation and clean drinking water. This inequity will worsen if development does not occur before large-scale environmental change. While continued reliance on fossil fuels threatens to exacerbate climate change, increasing access to fossil fuels in the world's poorest countries is required to lift millions out of poverty and dramatically improve health outcomes. To achieve the MDGs and build the infrastructure needed to improve resilience to future environmental challenges requires access to efficient forms of energy. The only equitable way to resolve this dilemma is for developed countries to dramatically curb their emissions and thereby offset the small per capita increases in the emissions of developing countries that are necessary to advance public health and adaptive capacity.

CLIMATE CHANGE CHALLENGES THE MDGS

In 2000, the United Nations adopted the eight Millennium Development Goals (MDGs) to improve the lives of the world's poorest people.¹ The MDGs aim to reduce extreme poverty and major infections while increasing education, gender equality, maternal and child health, environmental sustainability, and global co-operation.¹ Unless climate change is dealt with effectively, the MDGs will become exceptionally difficult to achieve. Many developmental gains will be lost if climate change is allowed to cause higher rates of infectious disease, food and water scarcity, natural disasters, ecosystem collapse, human migration, and conflict.²

Climate change is expected to amplify both environmental degradation and inequality.^{2,3} It is the single greatest global health threat of the 21st century, endangering the lives of billions of people and the natural systems that support life.² Other environmental problems, such as biodiversity loss, lack of food and water, overfishing, and deforestation do affect the poor, however, climate change has far more sweeping impacts.² Given its potential to dramatically change whole ecosystems, it is also the most urgent issue.² By century's end, climate change will likely be the primary driver of ecosystem change worldwide.³ If the global mean temperature is allowed to rise beyond two degrees,

ocean acidification and accelerated sea-level rise will lead to a biodiversity catastrophe.³ Global temperature has already risen 0.7 degrees above pre-industrial levels and is already impacting human societies in the form of extreme weather events, sea level rise, and changing patterns of disease.³ Aside from its direct implications for health, climate change threatens to seriously destabilize global security. As sea levels rise, land becomes uninhabitable, infrastructure is destroyed, and governments will have to confront and plan for a reality of massive migrations that have the potential to aggravate underlying ethnic and political tensions.^{2,3} The UN Environment Programme has identified the dramatic drop in average rainfall and resulting desertification of Southern Sudan as a major contributor to the conflict there, forcing an increase in domestic migration.⁴ For human populations, the possibilities for effective adaptation to climate change rapidly decline beyond a two-degree warming due to the scale of social disruption it is likely to cause.³ However, unless dramatic action is taken to reduce global emissions, a business-as-usual scenario is expected to result in at least a four-degree warming by 2100.³

Lacking the financial resources to adapt to climate change and hampered by a relatively high sensitivity to environmental degradation, it is the world's poor who will bear the brunt of climate change impacts.^{2,3} It is estimated that the loss of healthy life years as a result of global environmental change will be 500 times greater for poor African populations than for European ones.⁵ Simply put, eliminating poverty, the ultimate aim of the MDGs, will not happen if environmental degradation is allowed to exacerbate injury, malnutrition, and disease.^{2,3}

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ENVIRONMENTAL HEALTH DIRECTLY IMPACTS THE POOR

While the worst effects of climate change have yet to be felt, the world's poor already suffer disproportionately from environment-related morbidity and mortality. In 2007, the World Health Organization performed its first assessment of the environmental burden of disease.⁶ Surveying 192 countries, the assessment sought to quantify the disease burden by measuring the disability adjusted life years (DALYs) in each country that could be avoided by modifying the following environmental factors: pollution, hazardous exposures, the built environment, land use patterns, agricultural methods, man-made changes to climate and ecosystems as well as behaviours such as hand-washing or the personal use of protective equipment.⁶

The findings from this study show that the poor suffer most from preventable environmental disease, losing up to 20 times more healthy years of life per person per year than those in higher income countries.⁶ The majority of preventable, environment-related diseases in developing countries result from the lack of sanitation and clean water, a problem that will grow under the pressures of climate change.^{3,4,6}

FUEL USE AND HEALTH

While fossil fuels occupy an uncomfortable position as drivers of global climate change, access to relatively clean-burning, dense, and portable energy is a key reason why higher incomes afford better health. Increased access to energy is associated with higher life expectancy and lower infant mortality.⁷ The benefits of access to fossil fuels have little impact on health status beyond 2000 kg of oil equivalents per person per year, roughly one quarter the usage of the average North American.⁷ While these health gains cannot be fully ascribed to fuel, the necessity of energy for health is clear and is a large reason why global life expectancy has almost doubled since the industrial revolution.^{7,8} Currently, 2.4 billion people rely on the burning of coal or biomass (wood, charcoal, animal dung, and crop wastes).^{7,8} The indoor pollution created from the inefficient combustion of these fuels is estimated to cause 1.6 million premature deaths each year, with women bearing the largest burden.^{7,8}

Access to energy is a prerequisite to all of the MDGs.⁸ Phasing out biomass in favour of cleaner burning fuels benefits both health and development, in women and children particularly. People gain education and income-generation opportunities as they spend less time collecting fuel and gain personal access to electric light.⁷ Energy from fossil fuels is necessary to build infrastructure, expand access to electricity, and boost agricultural yields in developing countries: developments that improve access and quality of health care, education, sanitation, and nutrition.^{7,8}

Development, especially development that improves the status of women, is the best way to ensure fertility declines in the long term – a trend that reduces human pressure on the environment and makes the path out of extreme poverty easier.²

SUSTAINABLE DEVELOPMENT

Until the link between energy and greenhouse gas (GHG) emissions can be broken by a large-scale implementation of renewables (solar, wind, hydro, tidal, geothermal, and certain biofuels), we face a dilemma where bringing people out of poverty and decreasing their vulnerability to climate change will increase their global GHG emissions.^{1,2}

Even small per capita increases in GHG emissions in developing countries make a big difference globally, simply because they are home to 5.6 billion people (81% of the world population, including emerging economies).⁹

Despite the fact that developing countries have lower average


per capita emissions, they now emit 54% of the global share.¹⁰ By 2050, global per capita emissions must be held to around two tonnes of carbon dioxide annually to prevent the most dangerous levels of climate change.⁶ Currently, the North American average is over 20 tonnes per person.³ Industrialized countries have the largest historical responsibility for climate change.¹⁰ In reducing their own emissions, developed countries must account for the small per capita increases in emissions that are necessary for advancing public health and adaptive capacity of the poor.³

Beyond the small increases in emissions required for poverty alleviation, developing countries cannot follow the same pattern of development as the industrialized world at a time when drastic cuts in global emissions are required. Given the concentration of fossil fuel reserves, a heavy dependence on imported fuels would leave many developing countries vulnerable to supply interruptions and unaffordable prices.⁸ According to the most recent World Energy Assessment, the cost of investing in alternative energy is not prohibitive, and will decline over time.⁸ In a very influential 2007 report by a former chief economist of the World Bank, it was estimated that the cost of action to avert the worst impacts of climate change by transitioning to a low carbon economy is 1% of global gross domestic product (GDP) each year, a cost he has since revised to 2% of global GDP.^{2,11} The cost of managing the biggest impacts of unmitigated climate change, such as infrastructure damage and disaster assistance, could run as high as 20% of global GDP each year.^{2,11} The economic benefits of reducing the reliance of fossil fuels are obvious but will require foresight and global cooperation to make the necessary investments.^{2,11}

The shift away from fossil fuels requires increased energy efficiency, increased reliance on renewable sources and the accelerated introduction of new energy technology.⁸ Ultimately, the largest barriers to sustainability are human, not technological. Institutions, rules, financing mechanisms, and regulations must be

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altered to incentivize the switch to renewable energy sources.⁸ At the 2009 UN climate change conference in Copenhagen, developed countries committed to investing up to \$100 billion USD a year by 2020 into an adaptation fund for developing countries that are most vulnerable to climate change.¹² However, the hope of a globally binding agreement for emissions reductions was not realized.¹² Investments in adaptive capacity and development may be for naught, and will likely exacerbate climate change, if developed countries fail to take the lead on mitigation. 

REFERENCES

1. United Nations. The millennium development goals report. [Internet]. New York: United Nations, 2009 [cited 2009 Oct 29]; Available from: http://mdgs.un.org/unsd/mdg/Resources/Static/Products/Progress2009/MDG_Report_2009_En.pdf
2. Costello A, Abbas M, Allen A, Ball S, Bellamy R *et al*. Managing the health effects of climate change: Lancet and University College London Institute for Global Health commission. *Lancet*. 2009 May 16;373(9676):1693-733.
3. Climate change. Global risk, challenges and decisions. [Internet]. Copenhagen; 2009 March 12 [cited 2009 Oct 4]; Available from: http://climatecongress.ku.dk/newsroom/congress_key_messages/
4. UNEP. UNEP Annual Report 2007. [Internet] 2007 [cited 2009 Oct 30]. Available from: http://www.unep.org/PDF/AnnualReport/2007/AnnualReport2007_en_web.pdf
5. McMichael AJ, Friel S, Nyong A, Corvalan C. Global environmental change and health: impacts, inequalities, and the health sector. *BMJ* 2008; 336: 191–94.
6. Prüss-Üstün A, Bonjour S, Corvalán C. The impact of the environment on health by country: a meta-synthesis. *Environmental Health*. 2008, 7:7.
7. Wilkinson P, Smith KR, Joffe M, Haines A. A global perspective on energy: health effects and injustices. *Lancet*. 2007 Sept 13;370:965-78.
8. Johansson TB, Goldernberg J, eds. World energy assessment overview: 2004 update. [Internet]. UNDP, UN-DESA and the World Energy Council 2004-05 [cited 2009 Dec 29]; Available from: <http://www.energyandenvironment.undp.org/undp/indexAction.cfm?module=Library&action=GetFile&DocumentAttachmentID=1010>
9. Population Reference Bureau. 2009 world population data sheet. [Internet]. Washington: Population Reference Bureau Inc., 2009 [cited 2010 Jan 4]; Available from: http://www.prb.org/pdf09/09wpds_eng.pdf
10. UNFPA. State of the world population 2009. Facing a changing world: women, population and climate. New York: UNFPA: 2009.
11. Stern N. The economics of climate change: the Stern review. Cambridge: Cambridge University Press: 2007.
12. United Nations. Copenhagen Accord Draft Decision. [Internet]. 18 Dec 2009 [cited 2010 Jan 4]; Available from: <http://unfccc.int/resource/docs/2009/cop15/eng/107.pdf>



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