Righting the balance: energy for health

The current debate about the impact of human beings on our planet—especially with respect to climate change—is one of the most important issues of our time. But that debate is presently unbalanced and too narrow. It neglects a far larger set of issues focused on energy—and health.

Energy is a critical, yet hugely neglected, determinant of human health. Health is an important enough aspect of energy policy to deserve a much greater influence on decisions about our future personal, national, and global energy strategies. Society suffers from a disordered global energy metabolism. Energy is as important as any vaccine or medicine. 2 billion people currently lack access to clean energy: they live in energy poverty and insecurity. International institutions, such as the World Bank and WHO, have repeatedly failed to make the connection between energy and health in their country work.

The Series of articles we launch this week, led by a team of public-health scientists at the London School of Hygiene and Tropical Medicine, aims to correct these deficits. We highlight neglected interdependencies between disparate sectors—transport, agriculture, power generation, and the built environment.

Several principles emerge from this six-part report. Energy access and energy equity should become a human-development goal. Policies to improve access to affordable clean energy resources should be pro-poor. New technologies have a critical, but largely under-recognised, part to play in solving problems of energy and health. Society needs to prepare and plan for a substantial revision of its expectations about many aspects of life—the food we eat and the way we move around, for example. We must adjust, realistically, the balance of our energy production. Policies to reduce the progress and impact of climate change should explicitly aim to maximise health benefits and minimise health risks. And all energy-related policies should routinely incorporate health-impact assessments.

Action can be taken at three levels. First, the personal. A priority must be to ensure access to electricity for every human being. Each of us must consider ourselves as energy agents, as well as energy recipients. We must be prepared to redistribute energy resources to those in greatest need. These behaviour changes will mean avoiding certain types of travel, shortening travel distances, and changing the means by which we travel.

Second, the national level. High-income and middle-income countries must move to a low-carbon low-energy transportation system—increased walking, cycling, and public transport. With appropriate regulatory safeguards, countries should adopt nuclear energy technologies urgently as a transition between fossil fuels and more renewable sources of energy. Nuclear energy is not a long-term solution. It carries too many risks to make it a sustainable alternative to fossil fuels.

We must also change our urban infrastructure. We must build better and more efficiently heated, lit, and air-conditioned homes; we must incorporate these changes into all refurbishments; and we must include renewable energy technologies in the actual fabric of new buildings. Economic policies (eg, pricing and taxes) have the capacity to mitigate substantially adverse effects of energy policies that are harmful to health. These policies have received insufficient consideration in most western countries. In low-income settings, affordable technologies to reduce indoor air pollution are urgently required. We should all dramatically reduce our meat consumption.

Finally, at a global level, controlling greenhouse gases is a pivotal policy goal. But less discussed—and equally important—is the need for international agencies to make far stronger links between development, energy, and health. Energy insecurity is a foreign policy issue; it is a source of international tension and conflict. Such political instabilities will threaten the foundations of national health systems. Energy and its relation to health should become an explicit part of foreign-policy thinking.

The Lancet’s Steering Group on Energy and Health has devised a tentative set of indicators to measure, monitor, and track progress on energy and health globally. We invite the international community to join our call to advance this manifesto not only for the third of the planet’s population who live in energy poverty, but also for the totality of the earth’s vulnerable biodiversity.

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I owe a special thanks to Andy Haines, Ian Roberts, and Paul Wilkinson for coordinating this series of articles. The original idea sprang from conversations with Ian Roberts.
Access to plentiful supplies of energy and the services they provide have underpinned human development over the past few centuries. Energy carriers, such as fuels or electricity, provide energy services that benefit human society (heat for cooking, lighting for domestic and business use, private and public transport, communications and information technology, and refrigeration). In most parts of the world, investment in energy services has been more than sufficient to increase the provision of electricity per head despite continued population growth. In particular, there has been a steep increase in the number of people with access to electricity in east Asia during the past two decades. However, growth in energy services has not kept pace with population growth in sub-Saharan Africa, where increasing numbers of people lack access to electricity. Most people who rely on traditional biomass (eg, wood, dung) for cooking and heating, just under 1·9 billion, live in sub-Saharan Africa, India, and China. This reliance on polluting biomass fuels affects their health and prospects for wealth creation and social advancement. Highly polluting coal is still widely used for domestic purposes, for example in China.

At the same time there is growing scientific consensus, articulated most notably by the UN Intergovernmental Panel on Climate Change, that the world is warming significantly, with effects on precipitation patterns and storms around the world as a result of the accumulation of greenhouse-gas emissions in the atmosphere. There are substantial inequalities in emissions of greenhouse gas (mainly carbon dioxide) per head of population, which vary by a hundred-fold between rich and poor countries. The effects of climate change, which are likely to be largely adverse, will probably fall more heavily on those populations that have benefited least from the use of fossil fuels, from which a high proportion of greenhouse-gas emissions are derived.

The Series of articles published in *The Lancet* develops the case that there are potentially large benefits for public health through the implementation of policies to mitigate (ie, prevent) additional climate change, while also improving access to essential energy services and reducing exposure to indoor and outdoor air-pollution, as well as reducing other adverse effects of current patterns of power generation and energy use. The Series has been written by a multidisciplinary group and covers the wide-ranging and sometimes complex relations between fossil-fuel combustion and other sources of greenhouse-gas emissions on the one hand, and public health on the other. The Series also benefited from constructive input from several reviewers and we thank them for their contributions. It covers power generation, the built environment, transport, and greenhouse-gas emissions from agriculture, in particular livestock production. The Series suggests that there are several technologies and policies which can reduce greenhouse-gas emissions while promoting more equitable access to energy and the services that it brings. Health professionals have an important role to play in multidisciplinary research to understand further the links between energy and health and to quantify more rigorously the potential health effects, particularly the co-benefits for health and climate change that can be achieved by appropriate policies. They can also contribute by promoting appropriate energy policies in the health sector, which is a substantial user of energy and energy services, as well as within broader society.

Solutions outlined in the Series, however, lie not just in the development and implementation of technologies for energy efficiency and renewable energy in particular, but also in lifestyle changes—eg, encouraging increased active transport and reduction both in car dependency and the consumption of meat in affluent societies—especially from ruminants—as well as reducing population growth. The health effects of greenhouse-gas mitigation policies, including reducing inequalities in access to clean and reliable energy and the services that it brings, have been neglected as public-health priorities. This Series seeks to redress these deficiencies.

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I declare that I have no conflict of interest.


The built environment and health

In a recent British Medical Journal poll, the sanitary revolution that introduced clean water and sewage disposal was voted the most important medical advance since the journal was first published. That result reminds us of the crucial part played by urban planners and engineers in health improvement 150 years ago. As the squalor and decay of that time gave way to improvements in the environment, together with substantial advances in medicine and improved life expectancy, the 20th century saw a corresponding decrease in interest in the effect of the built environment on health. The automobile was pivotal in the planning of communities, with unforeseen results, such as urban sprawl and changes in lifestyles, health, and wellbeing.

The damaging social results of urban planning that ignore lessons from real life have been eloquently described in a seminal study of American cities. Crime, absence of social cohesion, noise, air pollution, and road-traffic accidents are some of the negative characteristics that have persisted or even increased, despite the efforts of well-meaning planners, architects, and transportation experts in past decades. Related to this changed landscape, the causes of disease that were prevalent a century ago have been replaced by more chronic disorders, such as asthma, obesity, and diabetes.

Against this background, a collective recognition of the crucial relation between the built environment and health, particularly within the neighbourhood as an essential health setting, is only just beginning to re-emerge (figure). Furthermore, climate change is leading to an urgent focus on sustainable building, which has the potential not only to minimise environmental degradation but also to improve health.

Researchers define the built environment as encompassing all buildings, spaces, and products that are created or modified by people. The built environment affects indoor and outdoor physical environments, social environments, and subsequently health and quality of life. It includes urban design, transportation systems, and land-use planning and policies that affect communities in urban, rural, and suburban areas.

Causal relations between the built environment and health have been difficult to establish, but there is a growing body of evidence showing the pathways and mechanisms by which the built environment affects health and factors associated with specific aspects of physical and mental health (webfigure).

Access to green open space can increase physical activity and mental wellbeing, because most sustained exercise is incorporated into daily routine activities. Putting health and wellbeing centre stage would result in streets, green spaces, and neighbourhoods that encourage more walking and cycling and opportunities for informal social contact and interaction. Noise and light pollution, which cause stress and inhibit communication, could be addressed through a skilful and balanced application of legislation and planning. Interior environments would play their part both in modification of behaviour (eg, more attractive and prominently positioned stairs) and by reduction of stress (eg, clear directions and good acoustics and natural light).

There is a consensus that until now the consideration of health and wellbeing has had little effect in the creation of the built environment, with socioeconomically disadvantageous living conditions being dominated by the political and economic agenda of industrial growth, consumption, and competition.
disadvantaged communities being worst affected. To make a difference, public-health and built-environment professionals need “to learn from each other how best to address the needs of the communities they serve, to determine what answers each has that the other needs, to create a common language, and to initiate the opportunities to use it”.

Two recent developments might strengthen this collaboration in England. The Strategic Environmental Assessment (SEA) Directive, which came into force across the EU in 2004, requires the likely significant effects on the environment of implementation of spatial plans, including the effects on population and human health, to be considered. Moreover, sustainability appraisals, which are mandatory in England and which incorporate the SEA, need spatial plans to be assessed for their economic, social, and environmental effects, with health being relevant to all three aspects of the assessment. Getting theory into practice has nevertheless been challenging for two reasons—the urgent need to establish greater and more routine collaboration between planners and health professionals, and to strengthen competence to undertake meaningful health assessments. Therefore the Department of Health in collaboration with its partners has recently issued draft guidance to help authorities assess the health impacts of their spatial plans effectively.

The second development is the establishment of Teaching Public Health Networks across England by the Department of Health. The Networks aim to encourage higher and further education as well as mainstream public-health learning across a diverse range of curricula. With strong support from the Department for Innovation, Universities and Skills, the development is already stimulating interdisciplinary collaboration for learning, which should create more interagency research and practice. For example, the University of the West of England (Bristol, UK) is leading the work to integrate health into built-environment curricula (Grant M, University of the West of England, Bristol, UK; personal communication). Furthermore, organisations such as the Commission for Architecture and the Built Environment, the Royal Town Planning Institute, and the Royal Institute of British Architects are promoting greater understanding of health effects among the built-environment professions.

We now need a paradigm shift in the way professions work together to translate our growing understanding of the link between the built environment and health and wellbeing into real and effective action.

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1. Ferriman A. BMJ readers choose the “sanitary revolution” as the greatest medical advance since 1840. BMJ 2007; 334: 111.