Environmental change and health
human dimensions, ethics and global governance

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Introduction

The impact of environmental change on human health is increasingly well documented. As the Science Plan for the Earth System Science Partnership Joint Project on Global Environmental Change and Human Health (ESSP GECHH) observes, "it is widely understood that human societies and the well-being and health of their populations depend on the flow of materials, services and cultural enrichment from the natural world" (GECHH 2007, p. 1). We know also that these are not occasional or minor problems. The United Nations Environment Programme (UNEP) suggests that "poor environmental quality is directly responsible for some 25 per cent of all preventable ill health worldwide" (2002, p.306). The World Health Organization (WHO) reports that every year "about 1.2 million people die from causes attributable to urban air pollution, 2.2 million from diarrhoea largely resulting from lack of access to clean water supply and sanitation, and from poor hygiene, 3.5 million from malnutrition, and approximately 60,000 in natural disasters" (2009, p. 2).

From a human dimensions and global governance perspective, this gives us cause to ponder a number of questions. What defines 'global' in this exploration of global environmental change and human health? What global patterns of risk and vulnerability characterise the human health impacts of environmental change? What current governance arrangements – rules, norms and institutions – address these concerns at a global level and, where gaps exist (as they almost certainly do), what can we say about the best way forward?

The human health dimensions of global environmental change

The negative impact of environmental change on human health – illness, disease, injury and a general loss of well-being – occurs through a number of overlapping and generally complex pathways. Some of these involve direct environmental hazards, such as air and water pollution, and the waste by-products of industrial and agricultural production. Others involve the loss of environmental services, such as clean water, biodiversity and arable land or the impact of environmental change on the genetics of pathogens and patterns of disease exposure. Other pathways are associated with structural changes, such as urbanization and the industrialisation of agriculture. Still others arise from the impact of natural disasters, such as drought, flooding and extreme weather events.

It is commonplace to note that we know a lot about the health burden associated with environmental change at the broad scale, but much less at the fine-scale of discrete and often differentiated local impacts. Taken together, however, the impact on human health – on people's lives, in effect – is substantial: injury, an increase in cancers and infectious diseases, birth defects and neurological illnesses, eye cataracts, respiratory illness, hunger and malnutrition, suppression of immune systems, reduced ability to fight off other illness and disease (MA 2005). Much of the recent public attention to environmental change and health has focused on (even come to be dominated by) climate change. The Intergovernmental Panel on Climate Change (IPCC) confirms, with fairly high degrees of confidence, that climate change is implicated in a growing burden of disease and premature deaths. Those adverse impacts, which far outweigh likely positive impacts on human health, include an increase in cardiovascular and respiratory disease; a growing disease risk resulting from floods, droughts and contaminated water; hunger and malnutrition associated with reductions in agricultural yield; and a likely increase in other infectious diseases, particularly those that are transmitted by water and insects.

Defining the 'global'

The global reach of the adverse health impacts of problems such as climate change and ozone depletion is clear. These are global commons issues, with health burdens that are dislocated from their causes. Other environmental problems which impact adversely on human health, such as the dumping of hazardous and toxic wastes, or the short- and long-range dispersal of other forms of pollutants are also fairly easily understood as challenges for the global agenda. They generate transboundary externalities, including health impacts that are so widespread, even if uneven in impact, as to be matters of shared concern that governments cannot address alone.

As a matter of scale, the 'global' in environmental change and human health is not confined to problems associated only with the global commons or with the displacement or dispersal of pollutants and wastes across borders. Many examples of environmental change that seem to have only local causes and consequences are tied up in the practices of a globalised political economy. Economic globalisation – the freeing up of trade, capital, labour and technology – has changed patterns of production, consumption and investment and, as a consequence, the patterns of supply, use and disposal of resources and environmental services. This has enabled major centres of economic and productive power to draw on the ecological capital of other (usually developing) countries or poorer communities. In such a complex world, even local economic decisions can be the result of demands and choices made by consumers or by corporate actors elsewhere. The diversion of land from subsistence farming to intensified agriculture or the diversion of water from agriculture to industry, with the possible loss of food security and biodiversity and increase in malnutrition and pollution related illnesses for example, can be read as a function of the global spread of corporate agribusiness and manufacturing investment, or western consumer demand for anything from flowers to soybeans, or industrial demand for processed raw materials to service global manufacturing.

The human health impacts of environmental change are also global in scale because of their links to the development agenda. The pursuit of development through economic growth, especially in the absence of effective or effectively implemented environmental management standards, can constitute a source of threats to human health. A growing health burden and weak health sector undermines development efforts and poverty alleviation. Developed countries are not immune to the kinds of adverse health impacts described above. But it is developing countries for whom these constitute the most serious challenges for economic and social policy. The IPCC is clear that the adverse health impacts of climate change will be greatest for those countries and peoples who have contributed least to global greenhouse gas emissions and concentrations (flows and stocks) – low income countries and, within those countries, the urban poor, the elderly, children, traditional societies, subsistence farmers, and coastal populations (PARRY ET AL. 2007, P. 393). Poorer countries are less able to manage the output and disposal of hazardous and toxic wastes and pollutants, including those that are 'dumped', often illegally, from elsewhere in the world. As a result, local communities face greater waste and pollutant-related health risks than those in developed countries. At the same time, health infrastructure in lower-income countries is often under-funded, and access to what health services do exist is frequently restricted for those who

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already live in poverty and are most vulnerable to environmentally-generated illness and disease.

Thinking ethically

These inequities in vulnerability, impact, resilience and ability to respond help to define the global dimensions of environmental change and human health in ethical terms.[1] They call for equity, fairness and dignity to be understood as a global condition in which those who are already the most disadvantaged, especially through conditions not of their own making, are not further disadvantaged. As a result, 'we have obligations to help the poor overcome the effects of inequalities' – in this case the unequal impact of environmental change on human health – 'even if we have had no part in creating them' (LINKLATER 1999, P.476). In ethical terms, this is often argued to constitute a global obligation on the part of the rich (countries and people) that derives from an ability to pay – the Good Samaritan argument. That ability is measured not only in terms of financial resources, but also in terms of the technological resources and expertise in both environmental management and healthcare possessed by developed countries.

There is a further and often contentious step in this ethical apparatus of defining the 'global'. Dobson argues that these are 'relationships of *actual* harm' (2003, P.31; EMPHASIS ADDED). Not all harm is intentional and deliberate. It can arise through unintended consequences and negligence or 'the *failure* to take reasonable precautions to prevent the risk of harm to others' (2002, P.330; EMPHASIS ADDED). It is difficult to argue that the suffering of illness, disease and injury arising from environmental change not of one's own making is *not* a form of harm. And, to return to the unequal pattern of risk and vulnerability described above, it is difficult to refute the argument that at least some of this harm, even if unintended, arises through negligence and failure on the part of the rich to address the causes of environmental change that have both transnational and global health impacts.

Global governance responses: practices, principles and rules

As environmental, development and ethical challenges, these are matters of global concern that both require and demand global cooperative responses. Global governance can be defined as 'efforts to bring more orderly and reliable responses to social and political issues that go beyond the capacities of states to address individually' (GORDENKER & WEISS 1996, P.17). It involves not just institutions in the organisational sense, but also the principles and practices that inform rule-systems and international agreements and the ways that governments, intergovernmental organisations and other actors cooperate on those orderly and reliable responses. [2]

The link between environmental change and human health is not entirely new to the international agenda and even a brief canvass of existing multilateral agreements and cooperative arrangements yields a wide-ranging set of rule-systems and governance arrangements. The 1947/1994 General Agreement on Tariffs and Trade (GATT) lists public health concerns as one of the few environment-related justifications for restrictions on international trade. Regional agreements such as the 1979 Convention on Long-Range Transboundary Air Pollution have been motivated in part at least by worries about the deleterious effects of pollutants on human health. These kinds of concerns are now scattered throughout key multilateral environmental agreements. Not surprisingly, some deal specifically with pollution and waste. Both the 1985 Vienna Convention and the 1987 Montreal Protocol on ozone depletion include as key concerns the adverse impact on human health of 'modification of the ozone layer' and the concomitant need to protect human health. In the 1989 Basel Convention on the Transboundary Movement of Hazardous Waste, Parties indicate that they are both 'aware of' and 'mindful of' the risk of damage to human health caused by hazardous and other wastes. The 1998 Rotterdam Convention on Prior Informed Consent also pays attention to the 'harmful impacts on human health… from certain hazardous chemicals and pesticides in international trade'. Health concerns resulting from exposure to persistent organic pollutants (POPS), 'especially in developing countries', underpin the 2001 Stockholm POPS Convention.

These expressions of concern are not confined to pollution agreements. The long preamble to the 1992 UN Convention on Biological Diversity (CBD) notes that the 'conservation and sustainable use of biological diversity is of critical importance for meeting the food, health and other needs of the growing world population'. Public health is central to the 2000 Cartagena Protocol on Biosafety adopted under the CBD. Biosafety is specifically understood to encapsulate 'the need to protect human health and the environment … from the possible adverse effects of the products of modern biotechnology' (CBD 2000, p.1). Article 1 of the 1992 United Nations Framework Convention on Climate Change (UNFCCC) recognises that the adverse effects of climate change – those which the Convention is intended to avoid or minimise – includes those that could

1 This corresponds to the 'allocation and access' theme in IHDP's Earth System Governance research project.

2 The new IHDP Earth System Governance project identifies these as the key questions of architecture and agency.

have 'significant deleterious effects' on human health and welfare. The preamble of the 1994 UN Convention to Combat Desertification is 'mindful' that desertification and drought are linked to 'important social problems' including 'poor health and nutrition and lack of food security'.

Global governance involves more than declaratory statements in treaty preambles and in plans of action. International agreements and arrangements and dialogues also establish the principles that should guide governments in addressing environmental change and human health.

This relationship between environmental degradation, human health and development has also featured in key action plans adopted and endorsed by the international community. Chapter 6 of Agenda 21, the programme for action for sustainable development adopted at UNCED in 1992, was devoted to protecting and promoting health care in the context of sustainable development. It recommended a range of programmes to 'achieve health for all by the year 2000' (UN 1992: PARA 6.4) costed, for the period 1993 to 2003, at approximately $US51 billion. The abject failure of that objective is evident in the Millennium Development Goals (MDGs) in which health features prominently. This includes halving, by 2015, the proportion of people suffering from hunger and the proportion of the population without sustainable access to safe drinking water and basic sanitation. Health issues – including 'clean water, sanitation … food security, chronic hunger, malnutrition … and endemic, communicable and chronic diseases' – were one of five priority sectors in the so-called WEHAB agenda at the 2002 Johannesburg World Summit on Sustainable Development (UN 2002, PARAS 18 AND 19).[1] We can add to Agenda 21, the MDGs, and the Johannesburg Plan of Further Implementation, multilateral efforts such as the Conferences on Health and Biodiversity (COHAB), the Environment and Health Ministerial Conferences convened by the European Environment and Health Committee, and the European Union's Environment and Health Strategy and Action Plan on Environment and Health.

Global governance involves more than declaratory statements in treaty preambles and in plans of action. International agreements and arrangements and dialogues also establish the principles that should guide governments in addressing environmental change and human health. Some of this has involved efforts to link human health to human rights. The 1972 Stockholm Declaration declares that people have the 'fundamental right to … adequate conditions of life in an environment of quality that permits a life of dignity and well-being'. Principle 1 of the 1992 Rio Declaration states that human beings are 'entitled to a healthy and productive life in harmony with nature' although it is not clear from the Declaration whether entitlements differ from rights. The 1994 Draft Principles on Human Rights and the Environment establish that 'all persons have the right to a secure, healthy and ecologically sound environment' and elaborated more specific rights to 'freedom from pollution, environmental degradation and activities that … threaten life, health… [and] well-being' (UN ECOSOC 1994, P. 75). However the Draft Principles have never been adopted by the UN General Assembly and claims about a human right to a clean environment have an uncertain status in international law.

Several other principles embedded in MEAs and other agreements and arrangements address the human health impacts of global environmental change. The most prominent are the precautionary principle, the principles of solidarity and equity, and the principle of shared responsibility, the latter entrenched in the Rotterdam Convention. The precautionary principle (which many governments still prefer to call an 'approach') requires that the lack of full scientific certainty, in this case about the impact on human health of pollutants or degradation of environmental services, should not be used as an excuse to defer action. The principles of equity and solidarity appear in various guises in regional agreements such as the 1994 Helsinki Declaration on Action for Environment and Health in Europe and the 1999 European Protocol on Water and Health but also in many of the global MAs described above which pay particular attention to the needs of developing countries. Underpinning all of this is a declaratory commitment to 'determined' action, to 'speedy action' and, from the preamble to the Basel Convention, to the principle that 'States are responsible for the fulfilment of their international obligations concerning the protection of human health'.

The specifics of those obligations are established in the guidelines, procedures and rules adopted in the international agreements described above. Governments are required to reduce to a minimum the generation of pollutants and wastes that affect human health. They are supposed to minimise the adverse effects of environmental change on human health

1 The other WEHAB sectors were water, energy, agriculture and biodiversity.

through adopting various control mechanisms and regulatory actions. They are expected to establish implementation plans of various kinds, take human health impacts into account in developing social and environmental policies (or, at least, 'carefully consider' those impacts), to harmonise their efforts in doing so (where appropriate) and ensure that they consult stakeholders, including vulnerable groups, in the processes of developing policy.

Governance gaps: where to now?

Governments are not fulfilling their obligations. As well as raising questions of accountability (another theme in the IHDP Earth System Governance project), this identifies a 'pressing need for international initiatives to fill the gaps between the environmental sector and the health and development communities' (COHAB 2005, p. 4). Existing MAs focus on preventing pollutants, waste and other environmental impacts that can have deleterious impacts on human health but say little on how to manage those adverse impacts when they do occur. Global strategies for prevention need to be supplemented with adaptive interventions to deal with the adverse impacts of global environmental change. There is growing recognition that this requires effective surveillance and early-warning – and better methodologies – for monitoring health vulnerability, risks and impacts. It requires effective partnerships between health and environment sectors, international support (including financial and technical support) for public health systems especially in developing countries, equitable access to those systems for people most at risk, and inclusive and site-specific strategies for building social resilience in the most vulnerable and disadvantaged groups and communities.

Governments are not fulfilling their obligations.

As an area of policy and research, global environmental change and human health is characterised by significant knowledge gaps. As the ESSP GECHH Science Plan observes, 'there is still much to be learnt about the basic relationships between environmental changes and human health risks' (GECHH 2007, p.14). The discussion above shows that we have a broad understanding of the contours of global governance arrangements for GECHH. But we require much more systematic research on exactly what international initiatives are being undertaken, the extent of financial and technical support, how international efforts integrate prevention and adaptation at multiple scales, and how they address the ethics of inequities in risk, vulnerability and resilience, taking people and their communities (not just countries) into account. Private, and public-private, governance arrangements involving nongovernmental organisations, civil society groups, and the corporate sector, are increasingly prominent in both environment and health sectors but we know little about how these function to address the human health impacts of global environmental change. Building these global governance questions into current research will help to broaden and deepen ESSP and IHDP research commitment to understanding the human dimensions of global environmental change and human health.

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