# More health for your buck: health sector functions to secure environmental health

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## Introduction

Modifiable environmental risk factors are responsible for approximately one quarter of the global burden of disease. This environmental burden of disease is distributed extremely unequally: in developing countries 15 times more healthy life years are lost per capita than in developed countries, with diarrhoea and acute lower respiratory infections among children being the largest contributors. The two principal environmental risk complexes for these diseases – drinking-water/sanitation/hygiene and indoor air pollution from solid fuel use – cause more than 2 million deaths annually.[1]

Known effective solutions include: ensuring that households have access to and use safe drinking-water and improved sanitation facilities; encouraging household water treatment; promoting the use of cleaner-burning stoves and switching from traditional solid fuels to cleaner modern fuels.[2,3] They are good value for money, yielding health-care savings, health-related productivity gains, time savings and environmental benefits that far exceed costs.

Delivery of environmental health interventions is, however, rarely administered or controlled directly by the health sector. Uncertainty about leadership and responsibilities across many public and private actors contributes to overall underperformance and inefficiency. This raises important questions about the most appropriate and effective roles for the health sector in environmental health policy development and implementation. We believe that, to date, attempts to answer these questions, conceptually or in practice, have been limited but will be essential if we want to make use of a significant opportunity to reduce the disease burden attributable to the environment, especially in developing countries.

## Defining a health system

Some would assert that, given the multitude of health problems and the health workforce crisis in developing countries, the health system should focus solely on the provision of health care and preventative services such as vaccination. They might argue that economic development – through a better infrastructure, higher incomes and greater purchasing power – would eventually take care of the "unfinished agenda" of access to basic environmental health services and healthy living environments.

This restricted view contradicts WHO's definition of a health system:

"A health system consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health. This includes efforts to influence determinants of health as well as more direct health-improving activities. A health system is therefore more than the pyramid of publicly owned facilities that deliver personal health services. … It includes inter-sectoral action by health staff …"[4]

Here, we argue that six specific health sector functions are critical in securing environmental health gains – both through direct health sector action and through working with other sectors (Fig. 1). These functions are: (i) ensuring that environmental health issues are adequately reflected in inter-sectoral policy development and implementation; (ii) setting and overseeing the implementation of health-protecting norms and regulations; (iii) incorporating environmental health in disease-specific and integrated health programmes; (iv) practising environmental health in health-care facilities; (v) preparing for and responding to outbreaks of environment-mediated diseases; and (vi) identifying and responding to emerging threats and opportunities for health.

It is evident from the WHO definition and historical experience, including the 19th century sanitary revolution, that the health system must be involved to accelerate the scaling-up and improved delivery of environmental health interventions.[5]

Multisectoral collaboration is complex and requires leadership and a clear consensus on and assignment of roles. Some of the critical health sector functions require direct action and leadership by that sector, while others can only be achieved in cooperation with other sectors. The execution of these functions can vary widely depending on the specific environmental health issue and between developing and developed countries.

### Inter-sectoral policy

Altering traditional household energy practices and extending use of safe drinking-water and sanitation involves energy, water, development, environment and finance sectors. The "voice" of health – advocating through ministries of health, health professionals and non-governmental organizations – in arguing for improved policy, practice and financing, may secure substantial health investment outside health sector budget lines. For example, WHO involvement in the East African Community strategy to improve access to energy provided an opportunity to identify health concerns associated with energy alternatives pre-emptively and to ensure that chosen approaches actually deliver health gains in practice.[6] Health sector roles include

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building and maintaining expertise to track and influence major policies that impact on health; employing formal mechanisms for health impact assessment; and establishing effective multidisciplinary collaboration.

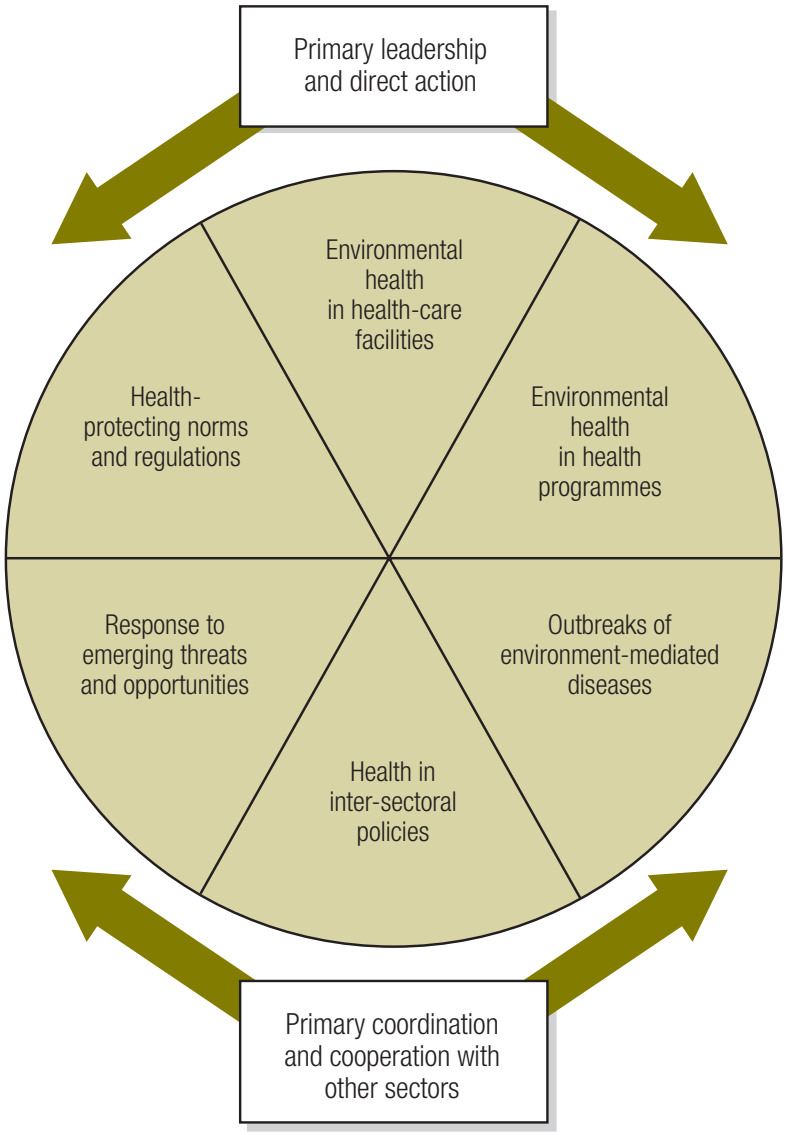
## Norms and regulations

Experience shows that regulation and certification have a strong influence on the delivery of safe services, technologies and products in homes, workplaces, schools and public places. Water safety plans, as promoted in WHO guidelines,[7] are being progressively applied in countries as diverse as Nigeria, the Philippines and the United Kingdom. In Iceland, for example, drinking-water quality improved markedly following regulations introduced in 1995 that require water suppliers to implement water safety plans. Various WHO normative guidelines on environment and health provide a consistent basis for protecting public health from the harmful effects of pollutants, based on best available evidence and scientific consensus. Health sector roles include developing health-protecting standards and regulations appropriate to a country's social, economic and environmental circumstances, as well as monitoring their implementation and contribution to achieving population health gains.

## Disease-specific and integrated programmes

Health professionals – generalists or specialists – are influential in raising awareness about health determinants, influencing attitudes and behaviours and generating demand for solutions. Under Indonesia's community Integrated Management of Childhood Illness programme, for example, every pregnant woman receives guidance on preventing coughs and diarrhoea by measures such as keeping children away from kitchen smoke, boiling water, hand-washing and using a toilet.[8] The local implementation of cross-cutting primary health care initiatives and of vertical disease programmes involves primary and community health workers, as well as social marketing campaigns through the media, schools and community organizations. Specific population groups may also be targeted, for example, HIV/AIDS programmes should reflect that HIV-positive individuals are more susceptible to environment-related disease

Fig. 1. **Health sector functions to secure environmental health**




yet may be denied access to latrines or water access points for fear of infection. Health sector roles include integrating environmental determinants into curricula for health professionals; incorporating environmental health messages and actions in health programmes; and working with partners in raising awareness in countries.

## Health facilities

"First do no harm" is a long-recognized maxim in health care. Nevertheless, health-care facilities cause many preventable infections through inadequate management of water, waste, hygiene and ventilation.[9] This imposes a high cost on the health system and attracts political and media criticism. In Lima, Peru, better air exchange achieved through improvements in the natural ventilation in tuberculosis wards reduced the risk of disease transmission between patients, visitors and hospital staff.[10] Health sector roles include setting standards for health-care facilities; budgeting for structural improvements and capacity-building to encourage behavioural changes among staff; and enforcing compliance through an independent oversight function.

## Outbreaks

Outbreaks of environment-mediated disease, such as diarrhoea, occur in developed and developing countries. An adequate response is critical for both disease containment and future prevention. The impact of an evolving understanding of the underlying determinants

of outbreaks on water management is well-recognized – from the removal of the handle from the Broad Street pump when John Snow recognized it was a source of cholera infection in 1854 to contemporary outbreaks of waterborne *Cryptosporidium* ssp. that have transformed policy and practice of disinfection and filtration in water supply.[11] Health sector roles include maintaining a nucleus of expertise to advise on and conduct outbreak investigation; testing, implementing and revising procedures in cooperation with other actors; and updating regulation and policy based on insights gained.

### Threats and opportunities

Maximizing public health requires identifying and tackling new, emerging and re-emerging risks and pursuing innovation. Such "proactivity" implies outbreak investigation (e.g. the initial recognition of legionella), examination of the spatial distribution of disease (e.g. vector-borne diseases in relation to climate change), analysis of trends in diseases and their determinants over time (e.g. tuberculosis resurgence following the break-up of the Soviet Union) and recognition of the value of technological advancement. For example, the Indian development of a new generation of efficient gasifier stoves, which minimize pollutant emissions from biomass combustion at relatively low cost, is of direct relevance to health improvement and climate change mitigation.[12] Health sector roles include seeking evidence for causal associations between environmental factors and health, as well as assessing the potential values and harms of technology innovation and policy development.

## Conclusion

Environmental health is a necessary element of the health system. We contend: that the six critical health sector functions identified here are essential in preventing a significant proportion of the burden of disease; that they apply to both developing and developed countries; and that they provide an under-used opportunity to translate the concept of primary health care into practice.

The health sector is well-placed to be leader and catalyst for complex multi-sectoral action. Mainstreaming health into other sectors' policies and programmes may be effective in tackling residual disease burdens that cannot be reduced through health sector action alone. In many cases, intervention costs are largely borne directly by households and are outweighed by the value of the benefits; the accompanying programme costs tend to be borne by sectors other than health. The required interventions therefore do not compete with health-care interventions for funding and thus represent a significant opportunity to mobilize additional resources for health.

We argue that the health sector needs to embrace each of these functions and roles; health professionals at all levels should engage more systematically and consistently in them; and active review of their implementation and impact should be undertaken as a matter of routine. ■

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