



PLANET  
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# RIO+20 POLICY BRIEF

#9

## Global health for a planet under pressure

Transition to sustainability: interconnected challenges and solutions



PHOTO: SHILPA VINOD BHATTE, WITH PERMISSION FROM INTERNATIONAL CENTRE FOR EYE HEALTH, LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

*A female care worker (right) supports mothers in the Mumbai community where she lives*

“Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.” Principle One of the Rio Declaration.

Multiple environmental stresses and rapid social change reinforce the need for better evidence – evidence that is robust and the product of interdisciplinary and intersectoral collaboration. The potential benefits to health from sound environmental policies are significant. Human health is a key indicator of sustainable development. We need to monitor changes in human population health in order to evaluate progress on global sustainability.

### Rio+20 Policy Briefs

One of nine policy briefs produced by the scientific community to inform the United Nations Conference on Sustainable Development (Rio+20). These briefs were commissioned by the international conference *Planet Under Pressure: New Knowledge Towards Solutions* ([www.planetunderpressure2012.net](http://www.planetunderpressure2012.net)).



# Summary of key points and policy recommendations

- **Protecting the global environment will have immediate benefits for health, welfare and livelihoods.** Health is a key goal of the green economy. Health benefits – less disease, less child death, less premature mortality – can be achieved through eradicating poverty, improving food security, sound water management, universal access to green energy services, sustainable cities and greater resilience and disaster preparedness. Scientists must receive support in providing the evidence base for good environmental decision-making.
- **Global environmental change poses major challenges for health and development.** Multiple environmental stresses and rapid social change obscure projections of future health and reinforce the need for better evidence. To prioritize health at the level of global policy-making, we recommend that health goals are incorporated into the text of international environmental conventions.
- **Health indicators are key measures of sustainable development.** Health indicators should be established to allow progress towards sustainable development to be monitored and evaluated.
- **Protect health from local environmental hazards, ensuring clean air and access to safe water.** Current efforts to reduce local environmental degradation are in danger of being weakened. The pervasive nature of local environmental degradation poses additional health threats to those arising from Earth system changes, including climate change. Millions of child deaths can be prevented by action that improves the local environment, providing clean energy and access to safe water and sanitation. The greatest burden of environment-related diseases falls on children in poor populations. National decision-making needs to take into account the real value of ecosystem and other environmental services, the likely costs of environmental externalities and the co-benefits of a low-carbon economy.
- **Global health policy needs to be brought into the institutional framework for sustainable development at national, regional and global levels.** Strong leadership in global health is required to ensure integrated transdisciplinary science for policy. A start has been made through the integration of animal and human disease surveillance in some regions to more quickly detect the impacts of environmental changes on emerging infectious diseases.
- We encourage the endorsement of **international agreements** that acknowledge the role of environmental changes in the social determinants of health (such as the World Health Assembly Declaration on Climate Change and Health, and the Ramsar draft proposal on Wetlands and Health) and the common causes of environmental damage and ill health (such as the United Nations Political Declaration on the Prevention and Control of Non-Communicable Diseases).
- **Better engagement with environment and health decision-makers is required at local, national, regional and global levels.** Scientists can aid this process through their work to quantify the health benefits or harms of specific environmental policies.



**RIO+20**

United Nations Conference  
on Sustainable Development

# A VISION OF GLOBAL HEALTH FOR ALL

**G**lobal health refers to health issues that transcend national borders and whose solutions require international cooperation. Global health issues include both the major killers of the past (malnutrition, infant mortality and diarrhoeal diseases) and of the future (cardiovascular disease, chronic lung disease, cancer and diabetes). It also includes preventative activities (targeting populations) and clinical care (for individuals), as well as the interrelationships among humans, domestic animals, wildlife and ecosystems. Health equity – access to good health for all – is a central aspiration of global health, which is therefore transdisciplinary and requires scientific evidence beyond that of the traditional health sciences.

## Why is the need to act so urgent?

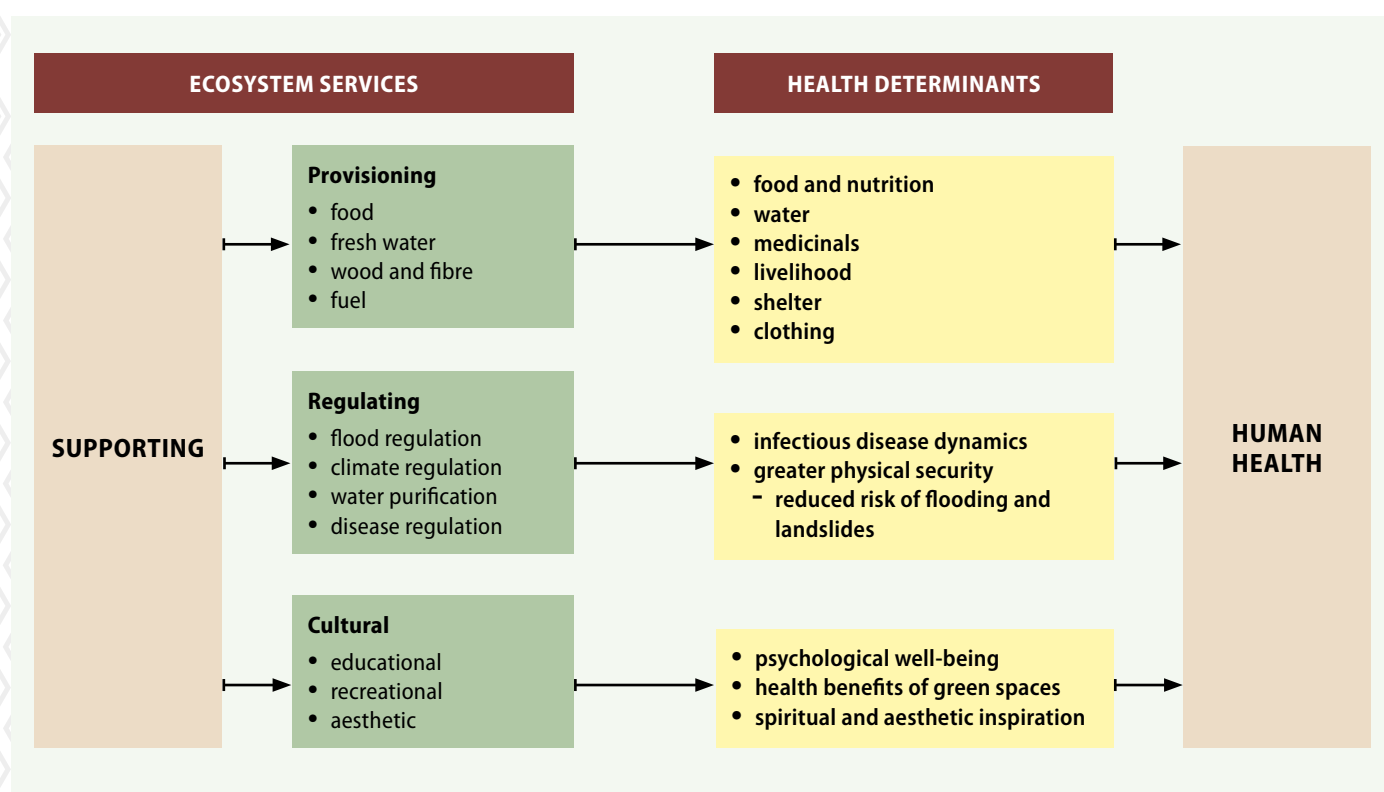
The impact of global environmental changes on human health is clear. The large-scale conversion of landscapes, with a consequent loss of regulating, cultural and some provisioning ecosystem services, has led to many human health benefits. However, these activities cannot continue indefinitely; the planet is under pressure.

Adverse changes to the global environment will harm health via multiple pathways, acting directly on disease transmission mechanisms and indirectly on the determinants of health. There is temporal, spatial and socioeconomic distance between the beneficiaries of environmental change

and those who will bear the consequences of the resulting increased burden of disease. This distance has weakened and delayed attempts to ensure that global environmental changes deliver durable net health benefits. The global health research agenda is beginning to address the wider determinants of health, such as poverty, inequality and weak health systems. Despite evidence that environmental changes are already harming human health, policy-makers are failing to recognize the dependency of health on environmental integrity.

## Deforestation and adverse ecological changes

Ecosystems are the planet's life-support systems – for humans and



**Figure 1.** Ecosystem services and health.

Source: adapted from the Millennium Ecosystem Assessment, 2003

for all other forms of life. Our basic needs, which are defined by biology, comprise food, water, clean air and secure shelter. Ecosystems both supply and help regulate many of these requirements by providing:

- provisioning services (e.g. food, fibre, pharmaceutical products);
- regulating services (e.g. water flow, climate regulation, infectious disease mediation);
- supporting services (e.g. maintaining soil fertility, recycling of organic wastes, cleaning up water pollution);
- cultural services (e.g. the aesthetic, psychological and spiritual benefits that accrue to people who dwell in forests or use them recreationally).

Millions of people depend on forests for their subsistence and as a source of nutrition. Deforestation can lead to a loss of livelihoods and health for such populations, though others may gain, for example through employment. Forests also provide important protection from natural disasters. There are many important reasons to maintain existing forests – not least their role in the global carbon cycle and as a repository for many endangered species (see brief on *Biodiversity and ecosystems for a planet under pressure*).

## Food security, nutrition and health

Global environmental changes are likely to affect food security adversely (see brief on *Food security for a planet under pressure*). Future food systems will need to feed a growing population despite adverse global environmental changes, including to the climate, water and air. It appears likely that substantial further reduction in the percentage of food-insecure people in the world

cannot be achieved without radical changes that provide environmental protection, allow fairer distribution of the food that is grown, and dramatically cut food waste. Food distribution is currently grossly unequal, reflecting the uneven spread of economic and food 'entitlement'. This is reflected in the larger burden of malnutrition on children and women.

Malnutrition, as well as being a leading cause of ill health and death, is also associated with lifelong cognitive impairment and reduced earning potential. Malnutrition in early life predisposes people to chronic diseases and, if sufficient calories become available in later life, to obesity.

## Water for health

Achieving water security would mean that every person has access to sufficient safe, affordable water to lead a healthy and productive life and that vulnerable people are protected from water-related hazards (see brief on *Water security for a planet under*

*pressure*). Globally, around 2.4 million deaths (especially of children) could be prevented annually if all people practiced good hygiene and had access to safe, reliable sanitation and drinking water.

Although the modest Millennium Development Goal target for access to safe drinking water will be met before 2015, there are still large numbers of people without access to clean water and the sanitation target will not be met. This is one of several global health problems that will not be solved by economic development alone. Further, it will be undermined by environmental changes (such as climate change and natural disasters) that damage urban infrastructure, and by changes (such as climate change and water-resource depletion) that reduce the overall availability of water. Few household-level water and sanitation technologies are resilient to climate change.

Scientific evidence is required to support decision-making on numerous water-related issues. These include: water management policy;



Child deaths can be prevented by good hygiene and access to safe, reliable sanitation and drinking water



respect for alternative livelihoods (especially in water-scarce regions); alternative agriculture for improved productivity; incorporation of traditional knowledge (e.g. into water conservation and allocation and environmental protection); protection of water quality (e.g. through sanitation and wastewater treatment); and emergency preparedness.

## Global climate change

The global and regional assessments of the Intergovernmental Panel on Climate Change have evaluated the scientific evidence for the potential impacts of climate change on human health. Climate change is likely to undermine global health strategies to reduce child and adult mortality. The main impacts on human health are likely to occur from changes in water and food security. Towards the end of the 21st century, high rates of warming may severely deplete the resources required for healthy living, as well as limiting the livelihoods and incomes required to access health services.

Potential increases in the frequency or intensity of certain types of extreme weather events constitute a serious concern for health, given current and future social vulnerability to storms, floods and landslides. Environmental degradation and deforestation also increase population vulnerability to weather disasters.

Climate change may also affect the transmission and control of infectious diseases, such as malaria. Even taking into account future improvements in health status driven by economic development, there is likely to be an additional health burden attributable to global climate change.

## Global environmental changes and emerging diseases

Humans rely on scientists to help them fight the emergence and spread of new infectious diseases as well as the resurgence of 'old' infectious diseases (e.g. cholera, tuberculosis, dengue and malaria). This constant battle now must address the unprecedented intensification and scale of human demography, economic activity and environmental change.

Environmental and social changes have always played a role in the emergence of infectious diseases. The increasing size, density, mobility and interconnectivity of human populations speed the transmission of new diseases and make them more difficult to control as well as increasing the probabilities of contact between humans, pathogen hosts and reservoirs of disease. Changes in the climate have been linked to the emergence of some vector-borne diseases in animals (e.g. bluetongue viral disease in Europe). Agricultural intensification has been proposed as a cause of emergence of the Nipah virus in Southeast Asia. Future tools for prevention will emerge from studies of the effects of different climate and environmental variables on the dynamics of pathogens and diseases in animals and humans and forecasting the temporal and spatial effects of environmental change on pathogen and host populations.

Environmental changes may facilitate the invasion of new pathogens in wildlife hosts and affect the overall dynamics of aquatic and terrestrial ecosystems. It is important that scientific investigations benefit from collaborations among ecologists, modellers, veterinarians, public health specialists and infectious disease



PHOTO: GERMAN POVEDA / UNIVERSIDAD NACIONAL DE COLOMBIA

*Studying malaria in Colombia*

biologists. Research should focus on key host species and pathogens in selected ecosystems (aquatic and terrestrial) and include epidemiological assessments, dynamic foodweb modelling and experimental studies to develop adaptive strategies on new patterns of disease transmission in wildlife affecting domestic animals and humans.

## Why is a cross-sectoral approach necessary?

The current approach to national and international policy on key global sustainability issues is fragmented and failing. Global and national governance is limited by sectoral divisions and attendant narrow, sectoral views. There is a particular failure on the part of health decision-makers to engage more widely and to directly address the health implications of environmental policies. Success hinges on an integrated approach to these challenges as well as on strengthening national and international environmental governance (see brief on *Transforming governance and institutions for a planet under pressure*). Addressing global environmental changes requires complex and evolving risk management.

# CHALLENGES AND OPPORTUNITIES

**W**e have the capability to undertake cross-cutting programmes with expertise from multiple sectors and strengthened, collaborative regional involvement; funding for such programmes should be prioritised. Health policy needs to be brought into the institutional framework for sustainable development at national, regional and global levels.

The challenges to achieving global health underscore the need for cross-sectoral approaches. The management of many of the key determinants of health is outside the health sector. The health sector has been slow to recognize the implications of global environmental changes for public health and health-care systems, partly due to the individual-focused model of health and its causes. There is also a need to forge links between natural scientists, social scientists and decision-makers. The solutions that will direct societies towards effective planetary stewardship must take account of the interconnection of these challenges. Adverse global environmental changes are a determinant of health that transcends national borders. They cannot be sufficiently addressed by a single country or a single sector.

Integrated actions across different policy areas are required to more rapidly deliver health improvements and maximize co-benefits. There is a growing body of evidence about the potential range of policies that could address both climate change and health goals. The term 'health co-benefits' is becoming more widely used to describe the ancillary or

collateral benefits to health arising from low-carbon technologies, strategies and lifestyles in a number of sectors.

Reproductive healthcare and the education of women will reduce infant and maternal mortality, cut fertility rates and contribute to poverty alleviation. There are under-recognized relationships between population size, population growth, fertility, poverty, literacy, health and the environment. There is good evidence that increased attention to the status, rights, education and literacy of women will benefit both human health and the environment.

## One health: integrating animal and human health

Most emerging diseases that affect humans originated in animals. We rely on healthy animals for food, energy and other goods. An integrated approach to detecting and responding to animal diseases recognizes the interconnectedness of human, animal and environmental health. Surveillance of animal diseases can provide early warning for human infections. An integrated approach offers a framework through which governments, non-governmental organizations and practitioners can view human health and address prevention measures. Infectious disease control could consequently be integrated with strategies for environmental sustainability, ecosocial sensitivity and adaptive responses. This in turn will require new types of interdisciplinary research and intersectoral actions to monitor and assess emerging trends and relationships.

## Linking agriculture and health policies

Agriculture and livestock are conservatively responsible for 10–12% of global greenhouse gas emissions (more if land-use change and deforestation are included). In countries with a high consumption of animal products, consuming less could help cut greenhouse gas emissions and also benefit health. For example, the burden of heart disease could be reduced substantially, assuming that the saturated fat was replaced by polyunsaturated fat of plant origin. Reducing the consumption of animal products, however, is unlikely to be an appropriate policy goal in nations that have low per capita consumption or where nomadic pastoralists depend on livestock for their livelihoods.

A substantial fraction of nutrients, such as iron, that could be provided by a diet higher in animal products is lost due to parasites, such as hookworm and schistosomiasis. A concerted effort to reduce the burden of these parasitic diseases would deliver a double-win for development by also reducing the incidence and level of undernutrition. Reducing food waste, in both developing countries (where this largely occurs soon after harvest) and in industrialized economies (largely post-consumer), is also important.



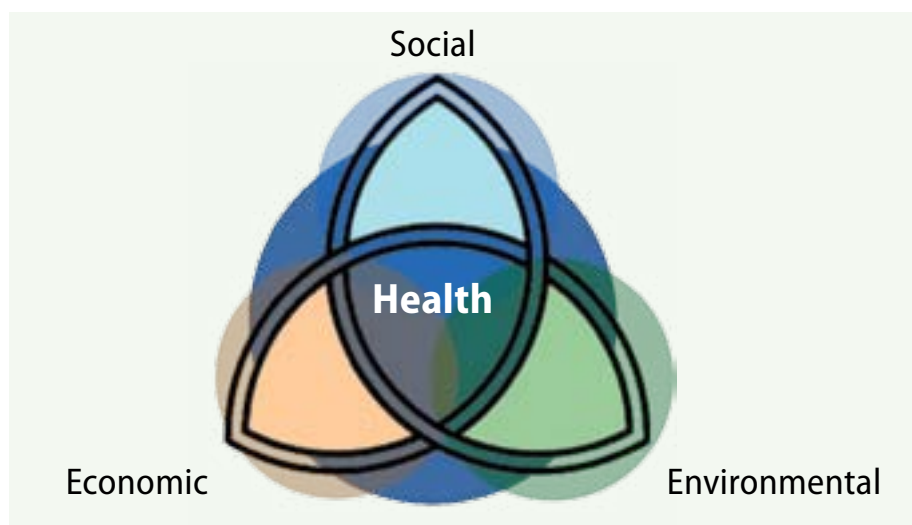
PHOTO: ISMAIL SEBINA, WITH PERMISSION FROM LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

# A GREEN ECONOMY AND GLOBAL HEALTH

**H**ealth is a key goal of the green economy (see brief on *A green economy for a planet under pressure*). Policies for infrastructure, the built environment and energy use will improve health and protect the environment. People in cities – especially the urban poor – carry a significant burden of disease and often suffer high mortality rates due to environmental factors and poor housing or homelessness. The opportunities for improving health through better planning and infrastructure are enormous. There is a growing body of evidence about the range of policies that could address both low-carbon goals and improve health.

Urban transport systems reduce physical activity and increase outdoor air pollution and road traffic injuries. Rapidly urbanizing populations in low-income countries also experience these health problems, although accident rates and pollution levels can be much higher. Indeed, road collisions are now the biggest single cause of unintentional injuries worldwide. Major health benefits (in particular a reduction in years of life lost due to heart disease and diabetes) could be obtained by shifting urban populations to more active modes of transport. In making such a shift, deaths and injuries from road accidents could be reduced further by policies to enhance the safety of cyclists and pedestrians. A more sustainable approach to land use could also reduce air pollution by discouraging urban sprawl.

Increased use of low-carbon sources of electricity, including many renewable technologies, will reduce



**Figure 2.** Health is at the centre of sustainable development.  
Source: PAHO, 2011

fine particulate air pollution as well as cutting greenhouse gas emissions.

## Governance solutions and a green economy

There are tangible health benefits for a green economy, which also translate to economic benefits. The health benefits of a clean energy policy could be substantial. If a green economy is to succeed, national policies must factor in the real value of environmental services and the costs of environmental externalities (e.g. outdoor air pollution and greenhouse gas emissions). If we properly value the environment and population health in monetary terms, a green economy will develop rapidly.

Society must better balance the interaction between human activities and the environment if the world's population is to achieve universal good health. Two somewhat conflicting criteria are vital for this: human development must meet people's basic needs, especially to escape poverty; at the same time, environmental sustainability is

essential. If we continue to destroy and damage natural resources, including ecosystem services, we will reach a threshold beyond which further poverty alleviation not only is impossible, but where existing gains may be lost. Environmental policies must consider the challenges to the health of future generations.

Achieving these goals requires far more action and multisectoral cooperation than have occurred so far. This action is required at local, national and global levels. Though intense attempts have been made to improve the balance between poverty and natural resources (such as through the World Commission on Environment and Development, the Rio Earth Summit, and the Multilateral Environmental Agreements), these efforts have not yet resulted in any truly fundamental changes to how we measure progress. The development of health indicators as key measures of sustainable development is essential for evaluating and monitoring progress towards sustainable development and global health for all.



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