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## How Can Life and Health Insurers Help Clients Facing Environmental Risks?

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### Introduction

Over the next 30 years most of the world's population growth will occur in urban areas of developing countries—precisely where the health impacts on human beings of environmental risks can be expected to be the most significant. Insurers who want to grow their business in terms of numbers of lives insured will need to understand these risks, as they cannot assume that the risk factors affecting mature market populations can be merely extrapolated.

But also in mature markets, environmental risks offer opportunities. Volatile weather patterns produce significant property damage every year: is there potential for life and health insurers to take a more active role?

In this article, we describe the main types of environmental risk, and discuss the potential impact on insurers in terms of:

- underwriting
- product design
- corporate social responsibility
- infrastructure investments that can be linked to mitigating environmental risks.

### What is an environmental risk?

An environmental risk can be defined as a factor outside the body that can affect a person's well-being and influence their behaviour. It can be created by man through the introduction of a new technology, a product, or a chemical, or it can result from natural processes which happen to interact with human activities.

They can be distinguished between risks reasonably well anticipated (such as flooding in a valley or pollution from an industrial smelter) and wholly unsuspected effects at the time the technology or activity was developed (such as possible effects on the earth's ozone layer of fluorocarbon sprays).

The second type is a challenge for insurers in terms of underwriting and product design: the lag time between the risk exposures and the resulting risk effects or disease diagnosis can be many years (e.g. mesothelioma might only occur 30 years after exposure to asbestos). What about future trends? Is it possible that materials that are regarded as safe at the moment may produce adverse health impacts 20–30 years into the future? When an insurer analyses and underwrites risks, he should try to make allowance for emerging risk factors on human beings in the future. Looking at the past may provide some clues, as can sensitivity testing and scenario planning, but in the end, it is a risk that by definition cannot be quantified.

In this article, we discuss the four main types of environmental risk:

- air pollution
- poor water quality
- climate change
- toxic substances.

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The WHO estimated that 8.5 per cent of total world deaths are attributable to the first three categories, with impacts heavily skewed towards lower income regions: 9.3 per cent in low- and middle-income regions and 2.6 per cent in high-income regions:

Percentage of deaths			
Risk	World	Low and middle income	High income
Indoor smoke from solid fuels	3.3	3.9	0.0
Urban outdoor air pollution	2.0	1.9	2.5
Unsafe water, sanitation, hygiene	3.2	3.8	0.1
Global climate change	0.2	0.3	0.0
Total	8.5	9.3	2.6

Source: World Health Organization: *Global Health Risks Report 2004*.

As shown in the table above, we distinguish between two different kinds of air pollution: indoor air pollution, mainly generated by inefficient ventilated stoves burning biomass fuels such as coal, crop waste and dung, or wood, generally used among the world's poorest population for their eating and cooking needs; and outdoor air pollution, mainly generated by industries and energy production, by road traffic and as a consequence of the inefficient combustion of fuels for transport.

Both household (indoor) and ambient (outdoor) air pollution cause respiratory diseases such as asthma in the short term and, over the long period, many other diseases that can be fatal such as stroke, heart disease and, in particular, lung cancer. Some studies suggest that poor air quality may take as long as 15 years to reach peak impact on people's health and so the relative impact may increase with industrialisation. Given the rapid growth of large cities around the world, this is an aspect of underwriting that needs to be under constant study.

Air quality is kept under control by monitoring the particulate matter (PM) level through measuring stations close to roads, schools and center of population. The PM is a microscopic solid or liquid matter suspended in the earth's atmosphere and depending on its size in the air, can be inhaled deep into the lungs (smaller particles) or be filtered in the nasal passages and the larger airways (larger particles).

In practice, it is difficult to establish a 'common' scale of the most polluted cities in the world for several reasons:

- (1) the measure may vary depending on the technology available to do it;
- (2) the real time spread of information on the internet may give different results over time;
- (3) the level of air quality has become a political issue and is therefore open to interpretation.

Consistent and reliable data surveys are then a key challenge. What is not in doubt is that decreasing air pollution is an important step in creating a healthy environment.

We can be affected by pollution not only through the air we breathe, but also through the water we drink or we use for bathing.

If we think that most of the earth's surface is covered by water and that most of the human body is composed of water, we can easily realise that there is a crucial linkage between water, health and ecosystems.

Poor access to safe and clean water can be a key factor in water-related vectors illness, such as diarrhoea or diseases such as malaria. Regions most affected by malaria are rural areas of developing countries, in particular, African regions where poorly designed irrigation and water systems are unfortunately too common.

The third of the environmental risks we want to analyse is linked to climate changes. Certain human activities have also been identified as significant causes of recent climate change, often referred to as "global warming". The principal reason for the global increase in temperature is industrialisation, with the burning of more and more quantities of oil, gasoline and coal, the cutting down of forests, and the use of certain farming methods. Warming

has been linked to an increment in the spreading of diseases, and extreme weather events create conditions for fostering disease outbreaks.

Last of the environmental risks is linked to toxic substances. The term 'agrochemicals' refers to the broad range of chemical products used in agriculture, including not only pesticides (insecticides, herbicides, and fungicides), but also some synthetic fertilisers (hormones and other chemical growth agents).

Unfortunately, many of these agrochemicals are toxic to humans and are not always judiciously utilised, in particular in developing countries where economies may be heavily reliant on agriculture. Additionally, the inappropriate use of toxic chemicals may be emitted directly into air and water.

### What should insurers be thinking about?

Basic biometric and lifestyle risks continue to be the main factors affecting mortality and morbidity, but from this brief description of the different kinds of environmental risks, we can see that they represent risks that are potentially significant in certain geographies, and may be expected to develop over time.

Therefore they need to be analysed by insurers in order to develop relevant and robust products with specific terms and conditions, based on an appropriate pricing. So, what should insurers be thinking about?

If we focus on air pollution, one of the worst consequences can be lung cancer, even if the lag time between the exposure to pollution and the disease's incidence can be many years. In order to help individuals face this risk, insurers can develop and market products covering defined diseases linked to high pollution levels during the long term, such as lung cancer, or products that cover more short-term needs, such as asthma.

In this case, the claims ratio may vary considerably depending on the pollution level and therefore, the insurer can start thinking of pricing and underwriting depending on this level. One option can be to define various geographical areas according to their pollution level and then to offer a discounted or a loaded premium accordingly.

Where the impacts are expected to be long term and difficult to measure, i.e., difficult to encapsulate in specific insurance offers, there is also potential for insurers to direct their Corporate Social Responsibility and investment focus to this area of constantly increasing public awareness:

- (1) Some safety measures have to be implemented on a country level. People need to be aware of the consequences their behaviour can have on the environment. This logic could provide the basis for a focused corporate social responsibility programme, linked to investments: public awareness of the impact of private transportation linked to investment in public transportation systems is an example of where insurers could take a position in an area which will affect their business in the long term.
- (2) Products can be developed by insurers according to these needs. For example, in the employee benefit business field, insurers can develop group policies including pricing factors such as distance of the company from public transportation or the number of cars in the company's fleet, or internal air quality monitoring.

Insurers can offer some services such as providing proper masks when the level of air pollution reaches some trigger points or water filter equipment for families living in areas with limited access to safe water. There can be many problems arising from poor water sanitation systems, not as risky as lung cancer but critical enough to affect people's health where access to medical facilities is limited and working conditions are fragile. For Europeans, diarrhoea is nothing but an (embarrassing) inconvenience, but for wage earners in rural areas of developing countries, it can be much more dangerous, both for health and income. This problem is mainly linked to poor water sources available. A partnership with technical and skilled companies in order to develop and build up new infrastructures with the aim of improving water quality, sanitation and to increase the access to adequate and safe water can make a huge difference. In terms of insurance products we can imagine some micro-coverages such as the payment of a daily salary in case the insured is not able to go to work. In this way, the insured can have the chance to recover, thus limiting the spread of other water-related vector illnesses such as malaria.

Related to environmental risk management is the spread of disease. The recent Ebola outbreak demonstrated how quickly infectious diseases can spread, particularly when the problem crosses national borders. By reacting more

quickly, as well as focusing on the causal factors for the spreading, lives could have been saved at a much reduced financial cost. Is there a role to play for insurers in providing coverages to governments to help them combat pandemics?

In a natural catastrophe, the relevant loss and its cost is spread among many parties: national and local governments, insurers and reinsurers, non-governmental organisations, individuals and companies. However, even if the insurer is only one of the entities suffering a catastrophic loss, the insurance industry can play an active and important role in studying, preventing and foreseeing climate changes—currently, most catastrophe models are based on past experience, but they should be developed in order to take into consideration future projections.

In addition to contributing to the prevention and forecasting of catastrophic events arising from climate changes, insurers can offer products covering post catastrophe health support including rehabilitation programs, potentially to individuals, companies and governments.

### Conclusions

Insurance is still one of the main tools for spreading risks across time and over large geographical areas, and we believe that environmental risks fall within an insurers' business scope. Like any risk, they represent downside potential if not understood correctly, and business potential if fully leveraged.

We believe that environmental risk understanding and management is key for insurers wishing to expand in less mature markets, and represent potential for socially responsible products and services in mature markets (witness the floods and big freezes experienced in European countries and the U.S. recently: should we just think in terms of property damage?).

Environmental risks are a fact of life and, as such, we need to incorporate them in our way of doing business.