Annexe 7 for ISDE DB 17.12.2002

ISDE position paper on climate change and human health

Policy and actions

Preamble

This policy document aims to define the broad areas to be addressed in preventing further climate change and in mitigating its effects. It therefore allows each national organisation to promote specific issues of importance to them, within a framework of ISDE policy and proposed actions.

Climate change is a major threat to human health. If the global emission of greenhouse gases are not stabilised and subsequently reduced, health services will not be able to cope adequately with the health impacts of climate change. In the interest of human health, ISDE will support all sustainable[1] measures that reduce the production of greenhouse gases, promote the saving of energy, and mitigate the health effects of global warming. Therefore, ISDE will work to support the following

1 Reduction of greenhouse gases

ISDE will work to reduce greenhouse gas emissions by influencing transport policies, by promoting alternative energy policy, by supporting the ratification and implementation of the Kyoto Protocol on Climate Change and by supporting economic measures such as the introduction of carbon credits.

Transport policy:

The transport sector contributes significantly and increasingly to global CO2 emissions. An integrated transport policy including the improvement of public transport promises multiple health benefits, including lower greenhouse gas emissions, less air pollution, less noise, fewer accidents, and less obesity. ISDE thus will use its influence to lobby Environment, Health and Transport Departments for full integration of health and environment concerns into transport policy making and transport investments.

Alternative energy policy:

ISDE will work to influence energy policy because of the major greenhouse impact

[1] e.g. excluding nuclear power

that electricity generation from fossil fuels has on health. The connection that exists between energy policy, the source of energy supply, climate change and health should be explained to governments and to industry.

International agreements on greenhouse gases:

ISDE is in an important professional position to lobby and influence governments. We urge those countries which have not ratified the Kyoto protocol to do so without delay. We appeal for full implementation of the Kyoto Protocol and further commitments to global long-term fair and equitable drastic reductions of greenhouse gas emissions.

Some members of ISDE with political contacts must promote economic mechanisms such as the establishment of carbon credits

2 Energy saving

ISDE members should use their influence to bring about energy saving and increased energy efficiency through professional contacts in hospitals, practices and government establishments in which they work and by personally adopting energy saving behaviour.

3 Public health infrastructure and surveillance

To combat the expected increase in some infectious diseases, it is essential to strengthen surveillance services and early warning systems in both developed and developing countries. Health professionals need to be trained and equipped to recognise and respond to emerging and re-emerging diseases. Improved public health infrastructures also strengthen a country's ability to provide better sanitation and clean water, vaccination programs, to prevent and treat HIV infection and to provide training for health workers and education for inhabitants. ISDE should assist in the strengthening of public health infrastructure by lobbying governments, Aid Organisations and WHO to give these needs a high priority.

4 Education

The national organisations of ISDE will promote the education of doctors and their patients regarding how their behaviour and energy consumption influences climate change, the potential health effects of climate change and the need for individual action. All doctors can play a part in this initiative through the dissemination of information in their waiting rooms and places of work.

5 Biodiversity and conservation issues

ISDE will offer support to environmental organisations in their initiatives to maintain ecological integrity, such as by reducing greenhouse gas emissions and protecting habitat. ISDE can point out the interdependence of health and the environment, and provide education on the importance of ecological communities as a resource for clean and ample food, water and other products.

Annexe:

The science and effects of climate change

The Intergovernmental Panel on Climate Change (IPCC) was established in the late 1980s under the aegis of the United Nations with the remit of advising governments on the mechanisms, consequences and mitigation of climate change. The work of the IPCC is conducted by several hundred independent scientists who review the relevant scientific literature and prepare reports that are then peer-reviewed by additional scientists. The most recent report (released in 2001) concluded even more strongly that in the 1996 report climate change induced by human activities is underway, and that the adverse consequences may be more severe than previously recognised.

There is increasing recognition by scientists and governments that climate change is underway. Only a handful of sceptical scientists continue to dispute the scientific findings. Nevertheless the scientific basis for an understanding of global warming is open to misinterpretation. Traditional scientific methods attempt to explore hypotheses or questions using experiments that can give reproducible results. By contrast, the science of global warming is largely based on computer projections, using models validated and improved as theory and current and historical data expand. Forecasts and conclusions must therefore be presented as statistical probabilities. The IPCC uses the words 'virtually certain' to mean a greater than 99% chance of truth, 'very likely' when there is a 90-99% chance etc.

Governments, though routinely dealing with uncertainty when it comes to economic forecasts and policy decisions, have yet to fully grasp that substantial uncertainty is also inherent in many fields of physical science. Climate change scenarios, especially if expanded to incorporate the various complex interactions and feedbacks of human society, exemplify this. Governments should adopt the precautionary principle as a basis for policy-making, but instead they use uncertainty as an excuse for prevarication or inaction. As a result, humanity is continuing to traverse an increasingly uncertain and risky trajectory, which at worst may compromise the sustainability of civilisation.

It is known that the global average temperature increased by 0.6^{0}C over the 20th century and that this has affected many of the earth's physical systems. For example, observations have shown a reduction of about two weeks in the annual duration of lake and river ice cover in the mid and high latitudes of the Northern Hemisphere during the 20th century. The extent of Northern Hemisphere spring and summer sea ice has decreased by 10 to 15% since the 1950s. Satellite data have shown a reduction in 10% in snow and ice cover since the late 1960s, and the widespread retreat of mountain glaciers has been well documented globally. Since 1950, observations show a reduction in the frequency of very low temperatures, with a smaller increase in the frequency of extremely high temperatures.

During the 20th century global sea levels rose between 0.1 and 0.2 metres and it is very likely that precipitation increased by 0.5 to 1% per decade over most mid and high latitudes of the Northern Hemisphere. The frequency and intensity of droughts have been observed to increase in recent decades. The El Niño-Southern Oscillation (ENSO) phenomenon, which affects regional variations of precipitation and temperature over much of the tropics, subtropics and some mid-latitude areas, has exhibited an increased frequency of warm (El Niño) episodes since the mid 1970s compared with the previous 100 years. Computer models suggest this may be a consequence of human actions.

There is increasing consensus that the increased global temperature has mainly been caused by emissions of human induced "greenhouse gases", including carbon dioxide (CO_2), methane and nitrous oxide. The atmospheric concentration of carbon dioxide over many thousand years has been determined from glacial ice cores. Its concentration during the Holocene (the current interglacial period) until the start of the Industrial

Revolution was stable at 280 parts per million (ppm) but since then has steadily increased, and is now over 370 ppm. These ice core data have been supplemented in recent decades by direct atmospheric sampling. Modelling, based on different socio-economic, technological and climatological scenarios, predicts that the concentration of CO_2 by the year 2100 will exceed 490 ppm and will even be as high as 1260 ppm. Stabilising the CO_2 concentration even at 450 ppm will require global human-induced carbon dioxide emissions to drop below 1990 levels within a few decades and continue to decrease steadily thereafter. Models show that if it takes a century for humankind to reduce CO_2 emissions to 1990 levels, then a concentration of 650 ppm could result. Overall, the global temperature is expected to increase by 1.4 to 5.8^{0}C by 2100, unless society is able to dramatically re-organise itself, in order to significantly curtail its greenhouse gas emissions. This rate of temperature increase would be much greater than any during the past 10,000 years. This evidence is based on data from paleontological studies.

While it is true that the transition from the last Ice Age to the Holocene also involved a rapid temperature change, and a far larger sea level rise than predicted even by "worst-case" global warming scenarios, humanity at that time was far less populous. Even though the rising seas must have been disruptive, most human societies were able to adapt, for example by moving further inland. The warming also enabled many human and animal populations to increase their range, especially to formerly ice-covered regions. Unlike then, current civilisation is vulnerable to disruptions on a *global* scale as a consequence of the changing environment. Such effects could involve the economy, agriculture, fisheries, shoreline infrastructure and even contribute to military conflict.

The physical changes described above are predicted to intensify in this century. Warmer temperatures are predicted to increase the sea level by around half a metre, with estimates ranging up to 0.9 metres, due to thermal expansion of seawater and the melting of snow, ice caps and glaciers. More intense precipitation in various parts of the world is predicted and other extreme climatic events, such as storms and droughts, are also expected to increase. Some climate models predict monsoonal changes, including increased aridity over large parts of India and South East Asia. This could adversely affect food security and lead to increased tension in the nuclear-armed subcontinent resulting in many more ecological refugees.

Further weakening of the Gulf Stream (which transfers heat to the high latitudes of Europe) is predicted by some models. Importantly, inertial effects in both the Earth's climatic system and the dissipation of atmospheric concentrations of greenhouse gases mean that climatic effects will linger far beyond the time of peak greenhouse gas emission. Discontinuities, or threshold effects, could also mean that even slight increases in temperature or greenhouse gas concentrations could result in greatly amplified consequences. One such example is sea level rise, which could continue for centuries, especially if the already documented melting of the Greenland ice sheet continues.

The effects of climate change on human health

The IPCC has extensively discussed the potential effects of climate change on human health (ref IPCC chapters). The overall assessment is that most of the impacts on human health would be adverse. Nevertheless, the accrual of empirical evidence on this relationship is an unavoidably slow, complex and, to date, very incomplete process.

Climate change-related pathways to ill health are likely to arise both relatively directly (eg. via thermal stress) and through complex mechanisms that involve disturbance to ecological systems, many of which are already stressed by factors such as pollution, bio-invasion and loss of ecosystem resilience, consequent to altered biodiversity. For example, climate change may interact with soil degradation to decrease the crop yields needed to feed a growing human population. The end result of these changes is the possible impairment of human health by reductions in nutrition, economic activity, habitable locations and an increase in infectious diseases. Large

changes to global temperature, extreme weather events and a changing distribution of precipitation could exacerbate conflict, war and the dislocation of environmental refugees, as communities compete for diminishing supplies of fresh water and arable land.

Many infectious diseases, both vector-borne and spread by microbially-contaminated food and water, are sensitive to changes in climatic conditions and have been predicted to increase in incidence and regional seasonality. As the global temperature increases, many vectors, and potentially the diseases they carry, will extend their geographical range. Recent modelling studies have indicated that malaria and dengue fever, which already impinge on 40 to 50% of the world's population, are likely to be particularly problematic, especially to many Third World populations, vulnerable because of poverty and unprotected by good public health resources.

Many ecological systems at risk from climate change are already stressed by pollution and land use changes due to increases in population and economic activity. Some of these systems will find it difficult to adapt and will undergo significant or irreversible damage. These include coral reefs and atolls, mangroves, boreal and tropical forests, wetlands and native grasslands. Biodiversity, already declining due to deforestation, growing populations and increased affluence, is expected to be affected adversely by climate change. For example, extinctions attributed to warming have already occurred in the Costa Rican cloud forest ecosystems.

Many of these scenarios are likely to harm human health. For example, damaged and reduced coral reefs and mangroves will harm important fish-breeding habitats. Many poor coastal and island populations are dependent on fishing for most of their protein and are thus vulnerable to nutritional deterioration. Reduction of tropical forests increases the vulnerability of mostly Third World populations to erosion and flooding. Climate-change related loss of wetland and damage to native pastures will also change ecological systems essential for agriculture and aquaculture.

The projected increases in global temperature mean an increased frequency of heatwaves, the health effects of which may be exacerbated by urban air pollution and increased humidity. This would lead to increase in heat-related deaths and illnesses, especially in populations unaccustomed to heat waves, and made vulnerable by age, pre-existing illness or poverty. Increased weather-related disasters, flooding, storms and droughts are likely to increase especially in the Third World. Poor housing and infrastructure, inadequate organisational and relief capability and epidemics of malaria, diarrhoea and respiratory infections are likely to increase morbidity and mortality. In some cases, frank starvation and malnutrition could follow.

Proposed by Tony McMichael, David Shearman and Colin Butler. 7 March 2002
Including comments from Karen Hopfl Harris, Gaudenz Silberschmidt and others
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