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Health Security through Healthy Environments

First Interministerial Conference on Health and Environment in Africa

Libreville, Gabon

26-29 August 2008

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Executive Summary

The environment is one of the primary determinants of individual and community health, and exposure to physical, chemical and biological risk factors in the environment can harm human health in various ways. Africa continues to face the "traditional" challenges of poor access to safe drinking water, hygiene and sanitation; absent or poorly designed irrigation and water management systems; and inadequate and poorly constructed road infrastructure, housing and waste management systems. Yet the continent must now also deal with new and emerging challenges, including the effects on health of climate change, accelerated urbanization and indoor and outdoor air pollution.

Increasingly, African governments are becoming motivated to improve environmental conditions in order to protect the health and well-being of their populations. However, in order to tackle the interlinked health and environmental challenges, there was a need for creation of an enhanced awareness among ministries of health and environment of the mutual relevance and benefits of each others' policies, strategies and programmes.

In an effort to catalyse these linkages, the World Health Organization (WHO) and the United Nations Environment Programme (UNEP) in partnership with the Government of Gabon, organized the first-ever Interministerial Conference for Health and Environment in Africa in Libreville, Gabon, from 26–29 August 2008. This First Interministerial Conference on Health and Environment in Africa was convened to explore the evidence base for the bidirectional links between health and environment.

The general objective of the conference was to secure political commitment for catalysing the policy, institutional and investment changes required to reduce environmental threats to health, in support of sustainable development.

The specific objectives of the conference were:

a) To demonstrate the importance of recognizing the interlinkages between the environment and health to achieving sustainable development;

b) To promote an integrated approach to policy-making in the health and environment sectors that values the services that ecosystems provide to human health;

c) To agree on specific actions required to leverage the needed changes in institutional arrangements and investment frameworks for mitigating environmental threats to human health.

A two-and-a-half-day scientific and technical meeting took place at *la Cité de la Démocratie* from 26 to 28 August 2008 to discuss the scientific evidence and programmatic issues. This meeting was followed by the one-and-a-half-day ministerial summit.

The conference was attended by over 300 participants including 52 country delegations: (a total of 82 ministers and heads of delegations from both health and environment ministries); scientific experts; partners; donors including United Nations (UN) agencies; secretariats of binding and non-binding conventions; development banks; European countries (France and Germany); and nongovernmental organizations.

The experts observed that unsafe water bodies, poor access to safe drinking water, indoor and outdoor air pollution, unhygienic or unsafe food, poor sanitation, inadequate waste disposal, absent or unsafe vector control, and exposure to chemicals and injuries were the most significant environmental risks to human health in most countries in Africa. They agreed that public health within the African region was already being severely impacted by climate change, with the major health effects including variability in agricultural production and food availability leading to undernutrition; variability in the transmission of malaria, diarrhoea and other vector-, water- and air-borne diseases; and negative health impacts from water scarcity and natural disasters such as floods and droughts. This was happening against a background of strained health systems.

The experts observed that over the past 25 years, the public health sector has been striving to embrace a more global, systemic and ecologically sound approach. The meeting observed that against a backdrop of high disease burden, much of it environment-related, and rising economic costs of environmental degradation, Africa had to contend with rapid urbanization and modernization. Environment-related diseases not only had an impact on the poor and vulnerable but also contributed to perpetuating poverty. Over the years, a number of technologies for the management of environmental risks to human health have been developed, but were not effectively and efficiently used because of a lack of an integrated policy approach, weak institutions, insufficient technical capacities and lack of intersectoral collaboration.

Although there was growing recognition among policy-makers in Africa of the close interrelation of health and the environment, in many countries national health-sector policies have been developed separate from those on environment. Planning and service delivery also takes place without deliberate integration. Legislative and regulatory frameworks have also been developed that address environment–health linkages. Instruments such as the health impact assessments (HIA) provided an important decision-making tool, through which the primary prevention of diseases can be achieved by development planning and design.

It is against the above that the ministers of health and ministers and environment of 52 African countries adopted the Libreville Declaration on Health and Environment in Africa. They declared the following:

"We African countries commit ourselves to:

1. Establishing a health and environment strategic alliance, as the basis for plans of joint action;
2. Developing or updating our national, subregional and regional frameworks in order to address more effectively the issue of environmental impacts on health,

through integration of these links in policies, strategies, regulations and national development plans;

3. Ensuring integration of agreed objectives in the areas of health and environment in national poverty-reduction strategies by implementing priority intersectoral programmes at all levels, aimed at accelerating achievement of the Millennium Development Goals;
4. Building national, subregional and regional capacities to better prevent environment-related health problems, through the establishment or strengthening of health and environment institutions;
5. Supporting knowledge acquisition and management on health and environment, particularly through applied research at local, subregional and regional levels, while ensuring coordination of scientific and technical publications so as to identify knowledge gaps and research priorities and to support education and training at all levels;
6. Establishing or strengthening systems for health and environment surveillance to allow measurement of interlinked health and environment impacts and to identify emerging risks, in order to manage them better;
7. Implementing effectively national, subregional and regional mechanisms for enforcing compliance with international conventions and national regulations to protect populations from health threats related to the environment, including accession to and implementation of the Bamako Convention by those countries that have not done so;
8. Setting up national monitoring and evaluation mechanisms to assess performance in implementing priority programmes and peer review mechanisms to learn from each other's experience;
9. Instituting the practice of systematic assessment of health and environment risks, in particular through the development of procedures to assess impacts on health, and to produce national environment outlook reports;
10. Developing partnerships for targeted and specific advocacy on health and environment issues towards institutions and communities including the youth, parliamentarians, local government, education ministries, civil society and the private sector;
11. Achieving a balance in the allocation of national budgetary resources for intersectoral health and environment programmes."

They called upon WHO and UNEP to:

- support, along with other partners and donors, including the African development banks and African subregional economic communities, the implementation of this Declaration, and to increase their efforts in advocacy, in resource mobilization and in obtaining new and additional investments in order to strengthen the strategic alliance between health and environment;

- help African countries in sharing experiences, developing capacity and establishing a mechanism to monitor progress towards the fulfillment of the commitments made at this conference, through peer review, and to organize a second Interministerial Conference on Health and Environment in Africa before the end of 2010, and;
- support the implementation of health and environment conventions and agreements and the establishment of an African network for surveillance of communicable and noncommunicable diseases, in particular those with environment determinants.

They called on His Excellency El Hadj Omar Bongo Ondimba, President of the Republic of Gabon, host country, to present this declaration to the African Union.

1. Introduction

The environment is one of the primary determinants of individual and community health, and exposure to physical, chemical and biological risk factors in the environment can harm human health in various ways.

Africa continues to face the "traditional" challenges of poor access to safe drinking water, hygiene and sanitation; absent or poorly designed irrigation and water management systems; and inadequate and poorly constructed road infrastructure, housing and waste management systems. Yet the continent must now also deal with new and emerging challenges, including the effects on health of climate change, accelerated urbanization and indoor and outdoor air pollution. Weather and climate are among the most important influences on both the natural world and human well-being. Weather affects health through extreme events such as heatwaves, floods, droughts and storms. Climate influences the fundamental environmental determinants of health, including the availability of safe fresh water and adequate food, stability of rural ecosystems as well as the transmission intensity and distribution of many infectious diseases.

In 2002, 23% (2.4 million, mostly children) of all deaths in Africa were attributed to environmental risks factors (WHO, 2006). In the same year, 1.03 million deaths were linked to inadequate water supply, sanitation and hygiene, with an additional 550 000 deaths being attributed to poor water resource management and unsafe water environments (WHO, 2008). An additional 40 000 deaths in Africa were estimated to be related to air pollution (WHO, 2007). It is anticipated that access to safe drinking water will remain an issue over many years to come and will influence Africa's capacity to achieve the Millennium Development Goals (MDGs). Despite an overall improvement in the coverage of water supply between 1990 and 2002, the regional projected coverage in 2015 still falls well below the MDG target of 75%.

Increasingly, African governments are becoming motivated to improve environmental conditions in order to protect the health and well-being of their populations. Ministries of health have a relatively long history, usually dating back to colonial times, while ministries of environment have been formed more recently as a result of emerging environmental concerns. The ministries are mandated to deal with the two distinct, but related areas, and may need to strengthen their links.

In order to tackle the interlinked health and environmental challenges, there is a need for creation of an enhanced awareness among ministries of health and environment of the mutual relevance and benefits of each others' policies, strategies and programmes. This linkage is a prerequisite to an integrated approach to policy-making that values the

services that ecosystems provide to human health and well-being. Furthermore, these actions are required to leverage the necessary changes in institutional arrangements and investment frameworks to reduce the environmental threats to human health, and to achieve the MDGs.

In an effort to catalyse these linkages, the World Health Organization (WHO) and the United Nations Environment Programme (UNEP) in partnership with the Government of Gabon organized the first-ever Interministerial Conference for Health and Environment in Africa in Libreville, Gabon, from 26–29 August 2008. In addressing health and environment issues shared by the two sectors, these issues were considered from the perspective of their concrete contribution to national development goals as defined by the African Ministerial Conference on Environment (AMCEN), the New Partnership for Africa's Development (NEPAD), the African Health Strategy of the African Union, country poverty-reduction strategies, and other processes, and translated from the global MDGs.

2. The Conference

The First Interministerial Conference on Health and Environment in Africa was convened to explore the evidence base for the bidirectional links between health and environment. It was intended to build a strategic health and environment alliance that will influence development policies at the macroeconomic and sectoral levels, impact on existing investment frameworks and resource allocation criteria and procedures, and lead to tangible outcomes in the short-, medium- and long-terms.

The general objective of the conference was to secure political commitment for catalysing the policy, institutional and investment changes required to reduce environmental threats to health, in support of sustainable development.

The specific objectives of the conference were:

a) To demonstrate the importance of recognizing the interlinkages between the environment and health to achieving sustainable development;

b) To promote an integrated approach to policy-making in the health and environment sectors that values the services that ecosystems provide to human health;

c) To agree on specific actions required to leverage the needed changes in institutional arrangements and investment frameworks for mitigating environmental threats to human health.

A two-and-a-half-day scientific and technical meeting took place at *la Cité de la Démocratie* from 26 to 28 August 2008 to discuss the scientific evidence and programmatic issues. This meeting was followed by the one-and-a-half day ministerial summit.

2. 1 Proceedings of the scientific and technical meeting

The meeting was structured around two main themes: "Environmental threats to human health in Africa: evidence base and health impacts" and "Existing mechanisms and opportunities to address health and environmental challenges". Under each of these themes a number of topics were addressed based on technical papers prepared by experts and sent to country delegations before the conference.
The plenary and parallel sessions were attended by the following groups of participants:

a) *Country delegations:* experts from the Ministry of Environment and the Ministry of Health;

b) *Scientific experts:* a number of international experts were also invited to give keynote speeches on specific themes of interest for the conference;

c) *Partners and donors:* including UN agencies; secretariats of binding and non-binding conventions; development banks, European countries (France and Germany), and nongovernmental organizations.

The meeting started on Tuesday 26 August 2008 with a welcoming remark by Dr Maria Neira, Director of the Department of Public Health and Environment, WHO. The meeting was then officially opened by Mr Jean Baptiste Ndong Nguema, the Permanent Secretary of the Ministry of Health of Gabon. He reiterated the relevance of the topics selected for the meeting based on the current environmental situation in African countries. He also called on the participating experts to come up with recommendations that could reduce the negative effects of environmental hazards on health.

Following the opening session the bureau was constituted as follows:

- Chairperson: Professor Lucien Obam, Gabon;
- Vice Chairperson: Dr Roland Robinson, Madagascar;
- First Rapporteur: Dr Jean de Dieu Nzila, Republic of the Congo;
- Second Rapporteur: Mr Ramsook Loykisoonlal, South Africa.

The agenda included a first plenary session with two keynote presentations: "Environmental threats to human health: evidence base and health impacts" and "Existing mechanisms and opportunities to address health and environmental challenges".

After questions for clarification and some comments, participants broke into parallel sessions to discuss the technical papers prepared by the secretariat as follows:

- Traditional and current environmental risks to human health;
- New and emerging environmental threats to human health;
- Health risks from climate change;
- Economic and development dimensions of environmental risk factors to human health;
- Contribution of ecosystem services to human health and well-being;
- Policy frameworks for addressing health and environmental challenges;
- Tools and approaches for policy-making in environmental management and public health;
- International legislative and regulatory frameworks;
- Health impact assessment (HIA).

These parallel sessions were then followed by a second plenary session where the outcomes of the discussions in the parallel sessions were presented and discussed. This plenary session also discussed the draft of the summary of the technical report, as well as the draft of the Libreville Declaration to be submitted to the Ministerial Session.

There were also several side events:

- Children's health and environment in Africa;
- The eco-health approach;
- International agreements and regulatory frameworks for chemicals and waste;
- A media panel;
- A press conference;
- Launch of the "Poverty and environmental partnership report"; and a press conference.

2.1.1 First plenary session

The first plenary presentation entitled "Environmental threats to human health: Evidence base and health impacts" was made by Dr Maria Neira, Director of the Department of Public Health and Environment, WHO.

Dr Neira presented key data to show the link between environment and health:

- Up to 25% of the total burden of diseases in developing countries are related to environmental risk factors.
- Children are paying the heaviest burden of diseases linked to environmental threats.
- 2.4 million deaths in Africa, out of 13 million in total, could be prevented if environmental risk factors were better mastered.
- Emerging threats are also having an impact on health.
- About 60% of the world's vital ecosystems are already degraded.

Concerning traditional risk factors, she stated that some of them were largely known, such as water pollution, air pollution, domestic waste, indoor smoke (fire wood, solid combustibles), and chemical substances. There are measures proven to be effective that can be taken to improve quality of life and reduce deaths. Countries are making more and more effort to reduce the negative impact of environmental risk factors on health, but most of the time at a slow pace.

There is an increasing number of emerging risks resulting from urbanization and industrialization that are affecting public health and the environment. For example many African cities are suffering from pollution of various types (including municipal waste), contaminating air and water. Climate change is a risk factor that is already present and having an impact on public health, in many instances as a result of emergencies arising from severe weather conditions. One way of dealing with emerging risks of this nature is to recognize the links between environment and health and to work in response through health and environment alliances involving all relevant partners.

The second plenary presentation, delivered by Mr Mounkaila Goumandakoye, Regional Director, UNEP, was on "Existing mechanisms and opportunities to address health and environmental challenges".

Mr Goumandakoye emphasized the need for the environment and health sectors work together. His presentation highlighted the following opportunities to address health and environmental challenges:

- There are already conventions that can be used to strengthen the linkage between environment and health, such as the Stockholm Convention on Persistent Organic Pollutants, or the Strategic Approach to International Chemical Management (SAICM).
- Various tools and approaches are available to help understand what the situation is (e.g. environmental impact assessment, health impact assessment – there may be a need to develop a more specific environment and health impact assessment tool).
- Policy frameworks can also assist, such as the Country Common Assessment, with the inclusion of aspects on environment and health, and the Poverty Environment Initiative.
- Institutional mechanisms can be used to broaden the partnership and bring in other agencies, civil society and communities.

He also called for the use of strategic initiatives such as the AMCEN, the WHO Regional Committee of Ministers of Health, and the Health and Environment Linkages Initiative (HELI). He referred to the declaration by 34 African governments at the SAICM regional meeting in July 2008, and the support of UNEP for that declaration. He also committed UNEP to working with WHO in implementing the outcome of this conference. He indicated that the next report of the African Environment Outlook process may be based on the theme of "Health and the Environment".

2.1.2 Parallel sessions:

i) Current environmental risks to human health

The experts observed that unsafe water bodies, poor access to safe drinking water, indoor and outdoor air pollution, unhygienic or unsafe food, poor sanitation, inadequate waste disposal, absent or unsafe vector control, and exposure to chemicals and injuries were the most significant environmental risks to human health in most countries in Africa. Indeed it was estimated by WHO in 2006 that around a quarter of the global disease burden was associated with environmental risk factors while in 2002, 23% (2.4 million) of all deaths in Africa were attributed to environmental risk factors. The underlying reasons for this situation include inadequate or flawed policies, weak institutional capacities, shortage of resources, and low general awareness of environment–health linkages among policy-makers and in the community.

ii) Health risks from climate change

It was agreed that climate change was already having a severe impact on public health within the African region. The major health effects include variability in agricultural production and food availability leading to undernutrition; variability in the transmission of malaria, diarrhoea and other vector-, water- and air-borne diseases; and negative health impacts from water scarcity and natural disasters such as floods and droughts. Anthropogenic climate change threatens to further worsen

environmental conditions, and exacerbate health vulnerabilities that are common in the African region. This includes increasing risks of climate extremes, reductions in the availability of food and fresh water, and more unpredictable, and probably more favourable, conditions for the transmission of many infectious diseases.

The experts called for a greater intersectoral, regional and global collaboration to protect and prepare for the likely health impacts of climate variability and change. These efforts should build upon the existing national and regional capacities for the management of climate-related health risks.

iii) New and emerging environmental threats to human health

The experts observed that that while Africa continued to cope with traditional environmental risk factors to human health, it also had to face new and emerging environmental challenges to public health, all in a context of strained health systems. These include climate change, which drives the epidemiological transition observed in emerging and re-emerging infectious diseases; persistent organic pollutants; electronic waste; radiation; and new occupational risks. Over the past 10 years, frequent outbreaks of emerging and re-emerging infectious diseases and mosquito-borne diseases have occurred and electronic waste (e-waste) was becoming a fast-growing concern. There have been significant radiation incidents reported, and new and more toxic substances (dioxins, furans and heavy metals) were creating environmental and health problems and new occupational risks in Africa.

iv) Contribution of ecosystem services to human health and well-being

The experts observed that over the past 25 years, the public health sector has been striving to embrace a more global, systemic and ecologically sound approach. Natural resource management today encompasses environmental, as well as social and economic considerations. Both fields have seen a shift towards a more integrated approach to management. However, in most African countries, there is still inadequate assessment and monitoring of the dynamics of human activities and their impact on local ecosystems, in great part due to inadequate technical capacity for assessing such impacts.

v) Tools and approaches for policy-making in environmental management and public health

A number of technologies for the management of environmental risks to human health have been developed. These include plans and technologies for water safety, household water treatment, safe sanitation, vector control (including environmental management), solid and medical waste management, and improved cooking technologies for rural settings. However most African countries lack the capacity to access and apply these tools and to deliver vital evidence-based knowledge on environment–health linkages. The lack of capacity to efficiently collect, synthesize and interpret technical health and environment data, attitudes towards new technologies, weak impact assessment processes, and unfamiliarity with tools for quantifying health costs and benefits in human and economic terms present additional obstacles.

vi) *Economic and development dimensions of environmental risk factors to human health*

The meeting observed that against a backdrop of high disease burden, much of it environment-related, and rising economic costs of environmental degradation, Africa had to contend with rapid urbanization and modernization. Environment-related diseases not only had an impact on the poor and vulnerable but also contributed to perpetuating poverty. Environment-linked illnesses have a direct impact on economic productivity, at both the household and national levels. The economic burden associated with lack of safe water, sanitation and hygiene, as well as indoor and outdoor pollution, is estimated to be about 1–4 % of gross domestic product (GDP) in a sample of African countries. Poor rural families affected by high rates of disease may shift to growing less labour-intensive crops, but these may have a lower nutritional and/or cash value. It was estimated in 2001 that even after controlling for other factors, the GDP growth rates in countries with intense malaria transmission were 1.3% lower than in other countries, and countries with more than half of the population living at risk of malaria had average income levels that were one third of those in countries with less intense malaria transmission. For too long, the health and environment sectors have sought to cope with the downstream consequences of poorly conceived economic development policies, while having little influence on the more upstream development decisions that profoundly shape the continent's natural environment.

vii) *Policy frameworks for addressing health and environmental challenges*

The 1992 United Nations Conference on Environment and Development in Rio de Janeiro, also known as the Earth Summit, underscored the important interlinkages that exist between the social, economic and environmental pillars of sustainable development, all of which hinge on good health. The MDGs also address the important environment–health linkages (Goals 4, 5 and 6), as does the Johannesburg Plan of Implementation for the World Summit on Sustainable Development, which is particularly related to the newly agreed SAICM. The NEPAD Human Resources Development Initiative also urges the integration of health and environment policies. In 2002, the WHO Regional Committee for Africa adopted *Resolution AFR/RC52/R3 on Health and Environment: A Strategy for the African Region*, which underlines the links between health, environment and development. Although there is growing recognition among policy-makers in Africa of the close interrelation of health and the environment, in many countries national health-sector policies have been developed separate from those on environment. Planning and service delivery also takes place without deliberate integration.

viii) *International legislative and regulatory frameworks*

Over the past two decades, legislative and regulatory frameworks have been developed that address environment–health linkages. In the area of chemicals control alone, different binding agreements (Rotterdam, Stockholm and Basel Conventions) co-exist with non-binding agreements such as the Global Harmonization of Hazard Classification and Labeling Systems. SAICM addresses the growing gaps between the capacities of different countries to manage chemical

safety. However, the extent to which these instruments have been streamlined within existing national legislation has not been formally documented. It is reckoned that these instruments are not sufficiently deployed nor adequately equipped. The dumping of hazardous substances in the city of Abidjan, Côte d'Ivoire in August 2006, demonstrated sharply the need for the recognition of the inextricable link between health and the environment at all levels, and for coordinated actions.

ix) Health impact assessments

The links between development, environment and health are as pronounced in Africa as they are elsewhere. Yet Africa is unique by virtue of its sizeable number of endemic communicable diseases linked to the environment, the relative fragility of the continent's ecosystems and the abundance of natural resources, the exploitation of which pose threats and opportunities for health, environment and development. Health impact assessments (HIA) provide and important decision-making tool, through which the primary prevention of diseases can be achieved by development planning and design. While most African countries have a framework for environmental impact assessment (EIA) the use of HIA is not regulated, and there are inadequate institutional arrangements for HIA that hinder its implementation. In addition, there is limited capacity for HIA. Partly because the importance of HIA is not yet appreciated by policy-makers in Africa, the tool is not being used to support development processes, including large-scale development processes. There is a need for defining national institutional frameworks for the systematic assessment of health impacts of development plans and projects, and for harmonizing HIA and EIA procedures and implementation, including by effecting necessary changes in public health acts as well as environment protection acts. There is also a need for HIA capacity building, for learning from international experience, and for access to good practice examples of HIA application. The importance of HIA should be communicated to high-level decision-makers in planning, health and environment, as a way to reduce the burden of ill-health through primary prevention of disease as well as the promotion of healthy environments through the planning of development strategies and projects.

2.1.3 Second plenary session

The second plenary session was dedicated to the report back from rapporteurs of parallel sessions. A general discussion took place to review and finalize the report of the expert meeting, the recommendation and to prepare the final draft Declaration.

2.1.4 Recommendations

The technical and scientific meeting made the following recommendations:

i) To countries:

Within the next two to three years countries should:

a. Establish a health and environment strategic alliance to influence sectoral policies for sustainable development that have an impact on the existing

investment frameworks and resource allocation criteria, and that lead to tangible outcomes and mutual benefit in the short-, medium- and long-terms;

b. Develop monitoring and evaluation frameworks, including a set of indicators to monitor country progress and programme performance;

c. Implement the following priority actions:

1. Undertake a systematic process of assessing, updating and mainstreaming health and environmental policies and actions into national development plans;
2. Adopt and apply the 'three ones' principle (one coordination mechanism, one national strategic plan and one monitoring and evaluation framework) to issues related to health and environment linkages;
3. Strengthen the coordination of relevant activities being carried out by various levels of government, especially municipalities, the private sector and civil society;
4. Develop intersectoral activities for the mitigation of health effects of environmental risks;
5. Periodically assess national institutional capacity for the efficient management of health and environment challenges;
6. Monitor and evaluate country performance, especially on the enforcement of existing environmental and health policies and laws;
7. Establish mechanisms for the identification and monitoring of new and emerging environmental threats and ensure their inclusion in emergency preparedness and response plans;
8. Ensure that national focal points for conventions and international agreements form a component part of national intersectoral coordination mechanisms;
9. Promote intercountry collaboration;
10. Increase joint health and environment community education and communication, including integration into school curricula;
11. Strengthen national and regional institutional and professional capacities on assessment and management of risks entailed by economic and development processes;
12. Incorporate harmonized health and environmental impact assessments and responses into development projects;
13. Coordinate scientific and technical reviews by health and environment experts to define priorities and identify knowledge gaps;
14. Support applied research on health and environment linkages, particularly at the local level, and ensure dissemination of results.

ii) To partners

1. WHO and UNEP should provide coordinated guidance and technical support to countries, especially to develop, implement, monitor and evaluate national action plans in support of the strategic alliance for health and environment.

2. Civil society organizations and the private sector should participate in the planning and implementation of national action plans in support of the strategic alliance for health and environment.
3. The African Union, regional economic communities, United Nations agencies and programmes, developments banks and donors should endorse and promote the strategic alliance for health and environment.
4. The above partners should mobilize the necessary technical and financial resources for effective implementation of national action plans so as to promote the mutual interests and benefits of health and environment in support of sustainable development.

2.2 Proceedings of the ministerial meeting

Angelique Ngoma, Minister of Health and Public Hygiene in charge of the Family and Advancement of Women, Gabon, delivered her welcome remarks. She thanked the President of the Republic of Gabon His Excellency El Hadj Omar Bongo Ondimba, for having accepted hosting of the event, the first of this nature on the continent. She welcomed all 52 delegations and thanked WHO and UNEP for their support in the organization of the conference. She noted the complex links between environment and health and called on policy-makers to take the necessary measures to develop and implement action plans that are based on priorities that Africa identifies itself in the context of sustainable development. She praised the work of the experts and the secretariat.

Mr Mounkaila Goumandakoye, Regional Director, UNEP, noted that the interface between environment and health requires a strengthened effort given its impact on development. He stressed the need for establishing a health and environment strategic alliance between actors in both sectors as the way forward in minimizing the consequences of environmental degradation on human health. He reassured partners of the UNEP commitments to work with WHO to: (i) effectively implement the recommendations of the conference ; (ii) extend this strategic partnership to other institutions including the private sector and (iii) ensure a regular monitoring of the implementation of the conference recommendations.

Luis Gomes Sambo, Regional Director for Africa, WHO, noted that we now live in a world of unprecedented awakening of the consciousness of communities and civil society organizations in regard to environmental issues and their linkages to health. Governments therefore needed to provide adequate response to the health problems caused by environmental risks. He indicated that the latest WHO estimates show that nearly a quarter of the global burden of disease is attributable to avoidable environmental factors. In addition, the burden of disease attributable to the environment is not evenly distributed around the world. Developing countries, especially those in Africa, are the ones most seriously affected and the vulnerable and poor populations are often the most hard hit. He said that the MDGs represented a shared vision, in that they crystallize the main aspects of the intersectoral action of governments and development agencies. They reflected the renewed commitment of

partners and guided the efforts being made to improve quality of life. Even more than a vision, the MDGs were a real source of hope. If the health and environment sectors worked together within a strategic alliance, they could make this hope a reality.
The Vice-President of Gabon, His Excellency Didjob Divungi Di Ndinge delivered the opening speech on behalf of His Excellency El Hadj Omar Bongo Ondimba, President of the Republic of Gabon. He stressed that the development of African countries called for rational management, by everyone, of their national environments. He noted that lack of accurate data and correlative studies hampered awareness or even timely understanding of the impacts of various development interventions. He recalled that, mindful of the threats to health due to industrialization and accelerated urbanization, the leaders of African countries acceded to various international conventions and treaties and most of them had embarked upon incorporating them in national regulations so that they can be effectively implemented. African leaders had gone even further in defining regional frameworks for environmental protection and preservation in the context of AMCEN and NEPAD environmental strategies. He concluded that all these actions reflected the will of the leaders of African countries to commit their respective governments and peoples to the drive to protect the environment and promote health.

The conference elected its bureau members by acclamation, namely: Chair Angelique Ngoma (Gabon); Vice-Chairs Halima Alao (Nigeria) and Paul Ralainirina (Madagascar); and two Rapporteurs, Marie Lloyd (Seychelles) and Batilda Burian (Tanzania). The conference considered and adopted its agenda and organization of work.
During its day-and-a-half meeting, the conference convened in plenary. The Chairperson of the meeting of experts presented the summary report, which was followed by a discussion and amendment of the recommendations and the draft Declaration in plenary, and culminated in the adoption and signature of the Libreville Declaration on Health and Environment in Africa.

The conference was attended by over 300 participants including 52 country delegations: (a total of 82 ministers and heads of delegations from both health and environment ministries); scientific experts; partners; donors including UN agencies; secretariats of binding and non-binding conventions; development banks; European countries (France and Germany); and nongovernmental organizations.

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Libreville Declaration on Health and Environment in Africa Libreville, 29 August 2008

We, African ministers responsible for health and the environment, meeting from 28 to 29 August 2008 in Libreville, Gabon;

Reaffirming our commitment to implement all conventions and declarations that bear on health and environment linkages, in particular the:

- Stockholm Declaration on the Human Environment (1972);
- Alma-Ata Declaration on Primary Health Care (1978);
- Bamako Convention on Hazardous Wastes (1991);
- Declaration of the UN Conference on Environment and Development, Rio de Janeiro (1992);
- Millennium Declaration and the subsequent Millennium Development Goals (2000);
- Johannesburg Plan of Implementation adopted by the World Summit on Sustainable Development (2002);
- Health Strategy of the African Union (2006);
- The recommendation of the Joint International Conference on "Desertification and the International Policy Imperative" (2006);
- Algiers Declaration on Health Research in Africa (2008);
- Ouagadougou Declaration on Primary Health Care and Health Systems (2008);
- The Ethekwini Declaration on Hygiene and Sanitation (2008);
- Bali Declaration on Waste Management for Human Health and Livelihood (2008).

Concerned that:

- Over 23% of deaths in Africa, estimated at more than 2.4 million each year, are attributable to avoidable environmental risk factors, with particular impacts on the poorest and the most vulnerable groups (children, women, rural poor, people with disabilities, displaced populations and the elderly).
- 60% of the vital ecosystem services of the planet are being degraded, or are being subjected to excessive pressures, and that it is these services that maintain the quality of air, land and water resources.
- The Bamako Convention on Hazardous Wastes adopted in 1991 is not being implemented.
- Africa is increasingly being affected by natural disasters caused by climate change.

Recognizing that:

- There is a need for further research to increase understanding of the vulnerability of humans to environmental risk factors, particularly in Africa.

- It is necessary and urgent to implement in our countries the imperative of sustainable development in efforts to achieve economic growth.
- There are constraints on accelerated implementation of the necessary integrated strategies to protect populations against risks resulting from environmental degradation including risk factors such as safe water supply, sanitation, air quality, vector-borne diseases, chemicals, waste management, new toxic substances, desertification, industrial and domestic risks, and natural disasters.

Convinced that:

- The emergence of new environmental risks (climate change, industrial expansion, and new technologies) presents new threats to public health.
- Africa is, of all the world's geographic regions, the most vulnerable in the face of these challenges.
- Well-managed health and environmental risks impact positively on national economies, including through increased foreign direct investments and tourism.
- The involvement and commitment of all actors is necessary for concerted and coherent action.
- Health security can be achieved through a healthy environment.

Therefore *declare* that we African countries commit ourselves to:

1. Establishing a health and environment strategic alliance, as the basis for plans of joint action;
2. Developing or updating our national, subregional and regional frameworks in order to address more effectively the issue of environmental impacts on health, through integration of these links in policies, strategies, regulations and national development plans;
3. Ensuring integration of agreed objectives in the areas of health and environment in national poverty-reduction strategies by implementing priority intersectoral programmes at all levels, aimed at accelerating achievement of the Millennium Development Goals;
4. Building national, subregional and regional capacities to better prevent environment-related health problems, through the establishment or strengthening of health and environment institutions;
5. Supporting knowledge acquisition and management on health and environment, particularly through applied research at local, subregional and regional levels, while ensuring coordination of scientific and technical publications so as to identify knowledge gaps and research priorities and to support education and training at all levels;
6. Establishing or strengthening systems for health and environment surveillance to allow measurement of interlinked health and environment impacts and to identify emerging risks, in order to manage them better;

7. Implementing effectively national, subregional and regional mechanisms for enforcing compliance with international conventions and national regulations to protect populations from health threats related to the environment, including accession to and implementation of the Bamako Convention by those countries that have not done so;
8. Setting up national monitoring and evaluation mechanisms to assess performance in implementing priority programmes and peer review mechanisms to learn from each other's experience;
9. Instituting the practice of systematic assessment of health and environment risks, in particular through the development of procedures to assess impacts on health, and to produce national environment outlook reports;
10. Developing partnerships for targeted and specific advocacy on health and environment issues towards institutions and communities including the youth, parliamentarians, local government, education ministries, civil society and the private sector;
11. Achieving a balance in the allocation of national budgetary resources for intersectoral health and environment programmes.

Call upon:

The World Health Organization and the United Nations Environment Programme to:

- support, along with other partners and donors, including the African development banks and African subregional economic communities, the implementation of this Declaration, and to increase their efforts in advocacy, in resource mobilization and in obtaining new and additional investments in order to strengthen the strategic alliance between health and environment;
- help African countries in sharing experiences, developing capacity, and establishing a mechanism to monitor progress towards the fulfillment of the commitments made at this conference, through peer review, and to organize a second Interministerial Conference on Health and Environment in Africa before the end of 2010;
- support the implementation of health and environment conventions and agreements and the establishment of an African network for surveillance of communicable and noncommunicable diseases, in particular those with environment determinants.

We call on His Excellency El Hadj Omar Bongo Ondimba, President of the Republic of Gabon, host country, to present this declaration to the African Union.

Signed in Libreville; 29 August 2008.

3. Conference Papers

3.1 Traditional and current environmental risk factors to human health (IMCHE/1/CP1)

Executive summary

Unsafe water bodies, poor access to safe drinking water, indoor and outdoor air pollution, unhygienic or unsafe food, poor sanitation, inadequate waste disposal, absent or unsafe vector control, deforestation, land degradation and exposure to chemicals and injuries have been identified as key environmental risks to human health in most countries in Africa. The underlying reasons for this situation include inadequate or flawed policies, lack of political engagement, weak institutional capacities, shortage of resources, and low general awareness of environment–health linkages among policy-makers and in the community. It is suggested that governments reorient their national policies to foster a greater contribution of environmental management towards public health. Specifically, governments may consider creating national frameworks and mechanisms for intersectoral action to adequately address the interlinkages between health and the environment, invest in the required infrastructure related to health and environmental services, build from past and current experiences, revitalize expertise in environmental management for health, and increase communication and community education to raise awareness of how individual practices can impact upon human health and the environment.

Acronyms and abbreviations

FAO Food and Agriculture Organization

GEO Global Environment Outlook

HELI Health and Environment Linkages Initiative

MDGs Millennium Development Goals

OECD Organisation for Economic Cooperation and Development

POPs persistent organic pollutants

UNEP United Nations Environment Programme

1. Background

1. WHO (2006) has estimated that around a quarter of the global disease burden is associated with environmental risk factors. In Africa, the key environmental risks include unsafe water, air pollution (indoor and outdoor), lack of food hygiene, poor sanitation, inadequate waste disposal, absent or unsafe disease vector control, exposure to chemicals, and injuries. These "traditional" and/or "current" risks are present in most African countries, with their relative importance varying according

to a country's level of industrialization and urbanization, impact of climate change, and issues such as poverty, malnutrition and overcrowding.

2. In its most recent scientific assessment of the state of the environment in the African region, UNEP highlighted that Africa's land is under pressure from a growing population, natural disasters such as drought and floods, desertification, inappropriate use of technology and chemicals, and poverty. In addition to threatening the livelihoods of the rural poor, land degradation has widespread effects on Africa's river catchments, forest and agricultural land, and ecosystem services. Africa is one of the regions most vulnerable to climate change and has the least adaptive capacity (UNEP, 2007b).

3. In 2002, 23% (2.4 million) of all deaths in Africa were attributed to environmental risks factors (WHO, 2006). In the same year, 1.03 million deaths were linked to inadequate water supply, sanitation and hygiene, with an additional 550 000 deaths being attributed to poor water resource management and unsafe water environments (WHO, 2008). An additional 40 000 deaths in Africa were related to air pollution (WHO, 2007). It is anticipated that access to safe drinking water will remain an issue over many years to come and will influence Africa's capacity to achieve the UN Millennium Development Goals (MDGs). Despite an overall improvement in the coverage of water supply between 1990 and 2002, the regional projected coverage in 2015 still falls well below the MDG target of 75% (UNEP, 2007b). The vast majority of Africa's population will continue to rely on unsafe water sources, which themselves are exposed to increasing contamination and pollution as a result of the continent's prevailing inadequate and inefficient water management policies.

4. Africa's renewable water resources are estimated to be about 5400 billion m^3 per year, of which 15% is ground water. Rising industrial output is causing water contamination from heavy metals and other chemicals, and significant increases in salinity, and proliferation of water weeds is becoming increasingly noticeable. In many places a deterioration of surface and groundwater quality has been observed, from chemical and biological pollution related to the discharge of wastewater into rivers and the oceans. Agricultural pesticides pollute ground-water systems and fertilizer runoff endangers ecological systems in rivers, leading to eutrophication.

5. Another serious concern to many countries in Africa is poor access to adequate sanitation, which is closely linked to the high incidence of diarrhoea, trachoma, worm infestation and many other vector-borne diseases seen on the continent. One of the Millennium Development Goals is to reduce by half the number of people without access to adequate sanitation by 2015, and this issue has been at the forefront of discussions in all countries and generated many activities related to the development of adequate sanitation facilities in communities. However, the scaling up of sanitation in countries with wide urban–rural disparities continues to present a challenge in terms of cost and affordability for communities, where furthermore, an awareness of the links between hygiene, sanitation and health is generally lacking.

6. Behavioral issues related to hygiene and sanitation, often determined by individual awareness, remain a key factor in human health. Certain practices such as bathing, washing and animal feeding from the same source contribute to the contamination

of water sources. Moreover, poor water supply is a primary cause for infrequent washing of hands and poor personal hygiene.

7. Air pollution is becoming a major environmental and health concern in sub-Saharan Africa. The African urban population is doubling every 20 years, and the related increase in the number of vehicles has resulted in the rapid increase in vehicular pollutants. The impact of air pollution on health is seen in the rapid increase in respiratory illnesses, heavy-metal-related illnesses, and allergies and skin diseases, which are experienced mostly by children and the poorest. Environmental pollution is therefore reducing human productivity in Africa. Air pollution in Africa is worsened by the continued use of leaded gasoline, poor quality fuels, and uncontrolled vehicular emissions.

8. Globally, indoor air pollution is responsible for the deaths of an estimated 1.5 million people each year (WHO, 2006). In Europe, acute lower respiratory tract infections attributed to indoor air pollution from solid fuel alone account for 4.6% of all deaths in children aged 0 to 4 (Valent, 2004). In Africa, where the use of solid fuel indoors is much greater, there is a strong likelihood that this accounts for a significantly greater percentage of all deaths in this age group. Furthermore, cutting of trees for fuel wood leads to damage to ecosystems and resultant changes in patterns of vector-borne disease transmission.

9. Food safety issues in Africa are mostly centered around illness, such as cholera, that are linked to poor hygiene. Food hygiene in homes, schools and markets remains as an area of concern. Street kiosks with poor hygiene and food handling practices are often the source of lunch for schoolchildren in many countries.

10. Chemical safety has been a major challenge to the continent. The production of agricultural chemicals remains a key focus of the African chemical industry. With economic and domestic production growth, an increased exploitation of natural resources and chemicals can be expected (Encyclopedia of Earth, 2007). These factors will only exacerbate existing concerns if chemical safety in the continent remains unaddressed.

11. Pesticides have been used in sub-Saharan Africa for more than 40 years, mainly in agriculture. This is the group of chemicals that poses the greatest concern for most African countries. Africa holds at least 50 000 tones of obsolete pesticides, which threaten both humans and the environment (UNEP, 2007b). Farmers are generally ignorant of the hazards posed by pesticides and frequently use them without the recommended precautions. Statistics of poisoning cases (although usually grossly under reported) have estimated (WHO, 2006) that between 46 and 84% of all poisonings in adults are attributable to occupation or the environment, with a higher percentage (60–98%) occurring in children.

12. Insecticides used in agriculture serve to increase resistance development in disease vectors, thereby worsening the current global disease vector control challenge. In Africa, vector-borne diseases such as malaria, trypanosomiasis (sleeping sickness), filariasis, onchocerciasis (river blindness), schistosomiasis (bilharzia), yellow fever, West Nile fever, chikungunya, dengue and plague continue to pose enormous public health challenges. Those situations often are the result of a bad management of surface waters or poorly maintained hydraulic installations. Over the past few

years, WHO, UNEP, FAO and other organizations have been supporting countries in the deployment of integrated pest and vector management strategies, particularly in the context of accelerated malaria control, through which the coverage of interventions such as insecticide-treated bed nets and indoor residual insecticide spraying has increased.

13. As in most developing regions, the African continent is faced with the threat of chemical pollutants. Many of these are imported through consumer goods in which the exact identity or quantity of chemicals is not known. User practices and improper disposal of these consumer goods may release toxic chemicals (such as dioxins and furans) into the environment, which can undergo long-range transport. Dioxin inventories from developing countries have shown that by far the largest proportion of dioxin emissions comes from agricultural and forest fires, and open burning of wastes (Fiedler, 2007).

14. Most African countries have an economy based on farming. The degradation of the land due to demographic pressure, deforestation, hydraulic erosion, and the intensive use of insecticides has an impact on agricultural yield, resulting in food insecurity that is a causative factor many for diseases.

15. A significant proportion of the urban population of Africa has poor access to refuse collection for proper solid waste management. Poorly managed waste presents a health risk to communities. This is primarily because untreated waste and waste that remains uncollected or improperly disposed of can be a source of contaminants and breeding sites. Such wastes contribute to diarrhoea, vector-borne disease, and the contamination of drinking water and other water resources. There are also examples where chemical contaminants released from dumping sites have caused direct harm to humans and, more commonly, destroyed environmental resources to the extent that they can no longer be used for human dwellings or activities. A study of one of Africa's largest waste dumpsites, the Dandora Municipal Dumpsite in Nairobi, found that half of the children tested in the area surrounding the dumpsite had concentrations of lead in their blood exceeding internationally accepted levels. Forty-two percent of soils samples from the dumpsite recorded lead levels almost 10 times higher than those found in unpolluted soil. The children had been exposed to pollutants such as heavy metals and other toxic substances through soil, water and air (smoke from burning of waste) leading to respiratory, gastrointestinal, and dermatological diseases. Almost half of the children tested had respiratory diseases, including chronic bronchitis and asthma (UNEP, 2007a).

16. Additional risks can occur from direct contact with toxicants from poorly managed wastes such as dismantled ships, batteries and vehicle tyres. Of particular concern is scavenging in waste disposal sites, which involves manual sorting of waste to recover sellable or reusable components, and the handling of waste from health-care facilities, which carries risks of needle-stick injuries and exposure to toxic or infectious materials. Indeed, a WHO assessment conducted in 22 developing countries showed that 18 to 64% of health-care facilities did not use proper waste disposal methods (WHO, 2004). The infectious wastes constitute a major risk for the population (hepatitis B and C, HIV).

2. Issues and challenges

17. It is clear from the above background that Africa is a continent where traditional environmental risk factors to human health have not been resolved. This situation can be attributed to inadequate or inefficient policies, weak institutional capacities and a shortage of resources, as well as a severe lack of basic public awareness in environmental health issues.

18. Competing priorities such as malaria, HIV/AIDS, tuberculosis and widespread poverty compound the issue. Notwithstanding the existence of proven cost-effective preventive interventions and although efforts are being made to scientifically document the linkages between the state of the environment and health outcomes, this knowledge has so far been poorly communicated to decision-makers.

19. Although the 1978 Alma-Ata Declaration on Primary Health Care placed emphasis on education and disease prevention through food supply, proper nutrition, adequate water and sanitation, in Africa there remains a lack of attention to those primary health-care services, apart from immunization, that provide effective prevention and health promotion. This phenomenon is associated with political, legislative and institutional barriers to improving environmental conditions. Due priority is not accorded to environmental health issues by policy-makers, as evidenced by the low priority given to health–environment linkages in the health agenda, and the resulting shortage of funds to implement proven and cost-effective interventions. Consequently, there is still an unacceptably high morbidity and mortality rate from diseases related to inadequate sanitation.

20. Over the past 40 years, public health programmes in Africa have been built with the principal objective of reducing mortality and morbidity attributable to communicable diseases, without taking into account the environmental dimension. However, these programmes have focused on curative services with little or no emphasis on prevention. Public health programmes have remained the sole preserve of ministries of health and therefore disconnected from other sectors that indisputably drive environmental risk factors and therefore determine disease outcomes.

21. The health and environment services in most African countries are still ineffectively built and distributed. The necessary intersectoral dialogue and collaboration is weak and leads in many instances to conflicting national policies, particularly between the environment and health sectors. A dynamic intersectoral collaboration between the two sectors would allow the impact of development projects to be debated and anticipated throughout their planning and implementation phases.

22. The inadequate staffing of health and environment services at all levels, and the devolution of environmental health officers to local functions at the district level and municipalities, leading to a weakening of environmental health services, remain as critical problems in Africa. There is a crucial need to raise awareness levels of policy-makers on the linkages between environmental conditions and health outcomes; reorient current national policies to favor greater contribution of

environmental management to public health; and improve the level, effectiveness, and interlinkages of health and environment services at the country level.

3. Proposed actions

23. If Africa is to get back on track in reaching the MDGs, it is imperative that the continent begins to rapidly resolve issues around the management of traditional environmental risk factors. Therefore, governments may wish to consider:

    a) Creating national frameworks and mechanisms for intersectoral action to address the linkages between health and the environment;

    b) Mainstreaming health and environmental policies and actions into national strategic plans with the aim of adequately addressing traditional and current environmental risks factors;

    c) Investing in the required infrastructure related to health and environmental services, and, applying environmental management to reduce health risks by building from past and current experiences;

    d) Increasing community education and communication to raise awareness of how individual practices can impact upon human health and the environment;

    e) Ensuring the coordination of various relevant activities being carried out by municipalities and civil society in order to facilitate their contribution to and coherence with national policies related to health and the environment;

    f) Setting up action plans on occupational health in order to assure the effective prevention of occupational diseases;

    g) Including a sanitation component in all development projects;

    h) Making mandatory an obligation to evaluate the sanitation impacts of all development projects by the leading health and environment institutions;

    i) Including management of hospital waste in all social development plans;

    j) Orienting support from development partners towards capacity strengthening in respect of strategies adopted for improvement of health and the environment.

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3.2 Economic and development dimensions of environmental risk factors to human health (IMCHE1/CP2)

Executive summary

Against a backdrop of high disease burden, much of it environment-related, and rising economic costs of environmental degradation, Africa has to contend with rapid urbanization and modernization. For too long, the health and environment sectors have sought to cope with the downstream consequences of poorly conceived economic development policies, while having little influence on the more upstream development decisions that profoundly shape the continent's natural environment. Environmental risks arise largely from unsustainable development policies related to the use of water and land resources, transportation and energy. The health impacts of environmental pollution and ecosystem degradation disproportionately affect the disadvantaged and vulnerable socioeconomic groups, such as children, the rural and urban poor and informal-sector workers. Economic, institutional, political and social factors present barriers to more sustainable environment and health policies; macroeconomic considerations tend to be the major drivers of policy-making on the continent. Health ministry policies are generally focused on health-care services and may not systematically address the related broader environment and development agendas. Environment ministries are often newer entities, and lack the power or resources to steer government investments towards sustainable development. African countries need to be able to monitor, prevent or mitigate risks that might develop into full-scale environmental and health crises.

Therefore, serious and urgent integration of both sector's (health and environment) activities should be encouraged/strengthened and emphasized, focusing on possible areas of prevention by establishing health and environment coordination units. Specifically, governments should strengthen their national institutes of health and environment, to *inter alia* assess the effects of development projects, and ensure the integration of objectives related to health and the environment into national poverty reduction strategies and development plans.

Acronyms and abbreviations

AU	African Union
DFID	Department for International Development, UK
EC	European Commission
EU	European Union
GEO	Global Environment Outlook
HELI	Health and Environment Linkages Initiative
MDG	Millennium Development Goals
OECD	Organisation for Economic Cooperation and Development
PRSP	Poverty Reduction Strategy Paper
UNEP	United Nations Environment Programme

1. Background

1. African countries are experiencing heavy disease burdens, growing economic and health impacts of environmental degradation, and rapid urbanization and modernization. Some of the most pressing environmental and health problems on the continent may be alleviated through careful development choices or exacerbated by poorly designed policies.
2. The health and environment sectors have had to cope with the consequences of poorly-conceived economic development policies, while having little influence on national development agendas, which profoundly shape the natural environment.
3. Industrial and agricultural production has intensified in most African countries, accompanied by the use of chemical inputs. The OECD (2001) has estimated that the global output of chemicals in 2020 will be 85% higher than it was in 1995; by that time nearly one third of the world's chemical production will be taking place in non-OECD countries, compared to about one fifth in 1995. The shift of chemical production from more affluent to poorer settings could increase the overall health and environment risks arising from the production and use of chemicals. In many African countries, chemicals that are banned in developed countries are still in use. A range of toxic effluents are emitted directly into the soil, air and water from agriculture and industrial processes, often at levels well in excess of global maximum permissible limits. Along with the problem of acute poisonings, cumulative exposure to various chemicals and toxins contributes towards a range of chronic illnesses in humans.
4. Over the next 30 years, most of the world's population growth will occur in the urban areas of poor countries. Rapid, unplanned and unsustainable urban development is turning developing-country cities into hotspots of emerging environmental and health hazards. These hazards include urban poverty, lack of access to clean water and sanitation, air pollution and traffic fatalities.
5. Environmental risks are largely the result of unsustainable policies related to water resources, agriculture, land use (urban and rural), transport and energy. The health impacts from environmental pollution and ecosystem degradation are borne to the largest extent by disadvantaged and vulnerable populations, including children and the poor.
6. Most of the world's poor depend on solid fuels for cooking and heating, increasing their risk of respiratory illnesses from indoor smoke. Similarly, poor populations are more likely to be exposed to diseases associated with unsafe water and unsanitary environments.
7. Agricultural and industrial workers who are often part of the informal labor market, work under substandard occupational health conditions, and are at great risk of acute poisoning and chronic illnesses from exposure to toxic substances, including pesticides and industrial chemicals.
8. The health impacts of climate change are likely to be borne disproportionately by the poor, many of whom also live in areas that are more vulnerable to the effects of a warmer and more variable climate and natural disasters such as floods and droughts.

9. Environment-related diseases not only impact the poor and vulnerable the most, but also contribute to perpetuating poverty. Environment-linked illnesses have a direct impact on economic productivity, at both the household and national levels. Poor farm families affected by high rates of disease may shift to growing less labour-intensive crops, but these may have a lower nutritional and/or cash value. Even after controlling for other factors, the GDP growth rates in countries with intense malaria transmission were 1.3% lower than in less malaria endemic countries, and countries with more than half of the population living at risk of malaria had average income levels that were one third of those in countries with less intense malaria transmission (Gallup and Sachs, 2001).

10. Despite being the least urbanized region in the world, Africa currently has the highest urbanization rate, with the continent's urban population doubling every 20 years (UNEP, 2007). Urban dwellers face a range of environmental hazards, including those related to unplanned and unsustainable transport-sector developments (Montgomery et al., 2004; Health Effects Institute, 2004). Urban air pollution, much of it generated by vehicles, is estimated to kill some 800 000 people annually around the world, 40 000 of them in Africa (WHO, 2007). Road traffic injuries cause another estimated 1.2 million deaths p.a. In addition, motorization promotes a more sedentary lifestyle, which itself is associated with diseases that cause some 1.9 million deaths each year (WHO, 2002).

11. Over the past decade, major international economic investments in Africa have focused on the transport sector, particularly the expansion and improvement of road networks with the aim of improving mobility and spurring economic growth. However, evidence from urban settings now indicates that road improvements undertaken alone may generate severe environmental and health problems, as well as exacerbate poverty gaps when public transport and non-motorized transport infrastructure are neglected (World Bank, 2004; Dora and Phillips, 2000). Thus, because of the cross-cutting nature of both its benefits and negative impacts, the development of the transport sector must be addressed in an intersectoral manner, with contributions from the health and environment sectors.

12. Trade, environmental health and poverty reduction are closely interlinked. Trade fosters the economic growth needed by African nations to reduce poverty. The EU-AU Economic Partnership Agreements (EPAs) coming into force in 2008 underline this point. Furthermore, the international development landscape (both public and private) is changing dramatically; these changes will have major ramifications for African development. For example, new and powerful donors like China and Brazil are emerging, who may not necessarily subscribe to European, OECD, and other traditional aid framework agreements.

13. The private sector development landscape is also changing, as are patterns and sources of foreign direct investment. This sector is beginning to fill key gaps in public-sector services in a growing number of African countries, e.g. transport infrastructure, and public transportation, power and energy infrastructure, telecommunication, water and sanitation, and even the provision of health-care services.

2. Issues and challenges

14. A review by the Health and Environment Linkages Project (HELI) of environment and health decision-making in a developing country context concluded that the primary barriers to effective environmental and health policies are neither the lack of evidence nor lack of knowledge, but are rather, economic, institutional, political and social.

15. Macroeconomic factors such as the globalization of trade and market liberalization, national debt burdens and structural adjustment policies are among the most powerful drivers of national political agendas, including those related to health and the environment.

16. The goods and services provided by bio-diverse ecosystems, upon which particularly the poor may rely for a healthy livelihood, are not meaningfully taken into account in market-driven development processes. This leads to continued degradation of these natural resources, and negative health impacts (DFID/EC/UNDP/World Bank, 2002).

17. Inequitable distribution of natural resources leaves the poor with few alternatives but to exploit the ecosystem in their surroundings whenever the opportunity is available. This exacerbates resource degradation problems, and promotes certain forms of pollution.

18. Population pressure in poor countries is worsening the stress on natural resources and the environment. The urban environment and health infrastructure have not kept pace with the rapid population growth in developing-world cities, thus increasing the health hazards related to inadequate housing, sanitation and transportation.

19. A paucity of institutional resources, human capacity and enabling frameworks impedes the adequate assessment of the complex links between health, environment, poverty and development. For instance, irrigation schemes may yield benefits in terms of food security and health, but when irrigation and dam design is not sensitive to the surrounding ecosystem, the development may provide optimum conditions for the proliferation of disease vectors, and thereby create new, negative health impacts. Agricultural chemicals can be used constructively to increase yields, but when regulation and community education is inadequate they also can kill or harm farm workers and children, and infiltrate water sources. The costs vs. benefits of development strategies, in terms of their impacts on health and environment, must therefore be fully analysed.

20. Health ministries have traditionally focused on health-care policies and service provision, without systematically addressing broader environmental and development agendas. Environment ministries for their part are often newer entities and lack the clout to influence sustainable development policies by their governments, instead remaining focused more on sectoral concerns such as nature conservation and pollution control. This institutional context generates barriers to coordinating action and mutually reinforcing strategies. Thus governments continue to make crucial policy and economic development decisions without substantive perspectives from the health or environment sectors.

3. Proposed actions

21. Very often, governments and society act only when a long-standing environmental risk erupts into a health, economic or political crisis. African countries need to take urgent steps to move from reactive to proactive policy-making. Governments need to be able to monitor, prevent or mitigate risks that might develop into full-scale environmental and health emergencies, including those risks brought on by economic development. Specifically, governments may wish to:

    a) Establish and strengthen national institutes or centres for health and environment, to *inter alia* assess the risks entailed by economic and development processes and provide advice on the management of such risks;

    b) Ensure that ministries of planning and similar ministries are integrated into frameworks established to coordinate intersectoral policies on health and environment;

    c) Ensure that integrated impact assessments are fully incorporated into development projects;

    d) Encourage the integration of health and environment objectives with poverty reduction strategies and development plans, including investments related to sectoral economic activities;

    e) Support professional capacity building and intersectoral forums that allow and encourage decision-makers, professionals from various sectors, and stakeholders, to share their knowledge and best practices.

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3.3 Contribution of ecosystem services to human health and well-being (IMCHE/1/CP3)

Executive summary

Over the past 25 years, the public health sector has been striving to embrace a more global, systemic and ecologically sound approach. Natural resource management today encompasses environmental, as well as social and economic considerations. Both fields have seen a shift towards a more integrated approach to management – the "healthy ecosystems" approach. By framing human health and well-being in the context of an ecosystems approach, it is recognized that healthy people and healthy environments are inextricably linked. Some 60% of the world's vital ecosystem services are already degraded or under pressure, and the health impacts of this situation are already being felt, particularly among the world's poor and vulnerable populations. In most African countries, there is still inadequate assessment and monitoring of the dynamics of human activities and their impact on local ecosystems. The UN has released an update on the progress and some of the challenges to achieving the Millennium Development Goals (MDGs). Among these, the degradation of ecosystem services constitutes an important barrier to achieving the Goals. Governments are being urged to recognize the inter-linkages between environment and health, from the perspective of the vital services that ecosystems provide to human health and well-being, and to promote integrated policies that value these services. Solutions require political commitment, concerted action and shared responsibility between different government sectors and the civil society. Countries should take steps to mitigate the underlying causes of ecosystem damage, while simultaneously improving human health. Intersectoral collaboration among government departments and the civil society, capacity building, dissemination of knowledge and good practices, and integrated action for health and the environment are also critical.

Acronyms and abbreviations

CSIR	Council for Scientific and Industrial Research
IDRC	International Development Research Centre
MA	Millennium Ecosystem Assessment Report
MDGs	Millennium Development Goals
UNECA	United Nations Economic Commission for Africa

1. Background

1. Over the past quarter-century scientists have made significant progress in quantifying the impacts of environmental hazards to human health. The root causes of environmental health risks frequently lie outside of the health sector, yet this sector has to deal with the resultant spiralling costs of health care and treatment, the society with death and disease, and national economies with lost human productivity. The experiences of developed and developing countries in establishing integrated policies and strategies for health, environment and

development at national and regional levels have shown that the challenge of bringing the environment and health to the fore of the development agenda can be met, and development investments can be planned more rationally.

2. Over the last 25 years, the public health sector has strived to evolve towards a more global, systemic and ecologically conscious direction. Natural resource management has also progressed to encompass environmental and social factors as well as economic parameters. Both fields have seen a move towards a more integrated approach to management. These two currents of thought have given rise to the term "healthy ecosystems".

3. The Millennium Ecosystem Assessment (MA) report (WHO, 2005) describes an ecosystem as "a dynamic complex of plant, animal, and micro-organism communities and the nonliving environment interacting as a functional unit. Humans are an integral part of ecosystems". By framing human health and well-being in the context of an ecosystems approach, it is recognized that healthy people and healthy environments are inextricably linked – the MA report describes ecosystems as "the life support system of planet earth".

4. It is incumbent upon human beings to recognize the services that ecosystems provide in people's quest for survival, fulfilment and future security, and the effect individuals' actions have on the various forms of life and ecosystems' sustainability. In doing so, humans must accept the responsibility for the rational management of nature's resources.

5. The MA report identifies ecosystem services as the benefits people obtain from (a) provisioning services such as food and water; (b) regulating services such as regulation of floods, drought, land degradation, and disease; (c) supporting services such as soil formation and nutrient cycling; and (d) cultural services such as recreational, spiritual, religious and other non-material benefits. A good illustration of ecosystem services to human health would be traditional medicine; ecosystem service failure can manifest itself in increased incidence and severity of diseases.

6. There is increasing awareness of the need to address the underlying causes of disease outbreaks and the inability of communities in Africa to cope through traditional avenues. Throughout the developing world, traditional medicines are the primary source of health care for up to 80% of populations (WHO, 2002). The source of traditional medicines is reliant to a large extent on the integrity of ecosystems from both a provisioning and cultural perspective; this includes not only the species harvested for medicinal use, but also for the importance placed on landscapes and places of sociocultural, religious and symbolic value (Cunningham et al., 2008, in press). Pressures on ecosystems from over-harvesting, habitat loss, land degradation, and climate change not only reduce the resource base of medicinal species, but can also change the distribution and patterns of disease vectors.

7. Access to primary health care remains a major challenge in developing countries, and particularly in Africa. It has been reported that emigration has caused the number of trained health-care professionals in sub-Saharan Africa to fall below the thresholds required to achieve the health-related MDGs.

8. Human well-being has multiple constituents, including health, material well-being, freedom of choice and action, social support systems, and security. Well-being is the opposite of poverty, a state of "pronounced deprivation in well-being". The constituents of well-being, as experienced and perceived by people, are situation-dependent, reflecting local geography, culture, and ecological circumstances.

9. The MA report indicates that modern-day advances in health and well-being are being placed at risk by the degradation of ecosystem services. Some 60% of the world's vital ecosystem services are already degraded or under pressure. The health impacts from such pressure are already being felt, particularly by the world's poorest and most vulnerable populations, as unsafe water and sanitation, dwindling solid fuel supply, air pollution, climate change, heavy-metal poisoning, and growing disease burdens.

2. Issues and challenges

10. The scientific evidence of the benefits of environmental health interventions has in the past not been effectively integrated into development decisions. In most African countries, there is still inadequate assessment and monitoring of the dynamics of human activities and their impact on local ecosystems, in great part due to inadequate technical capacity for assessing such impacts. This situation does not favour the development of locally appropriate strategies to adapt, mitigate damage and implement corrective measures.

11. The Millennium Declaration set 2015 as the target date for achieving the MDGs. The UN has released an update on progress and the challenges to achieving these goals. While there has been some encouraging progress, there remain serious challenges that will require more concerted and sustained action. The degradation of ecosystem services represents an important barrier to achieving the MDGs. The unsustainable use of ecosystems in many parts of Africa is likely to cause serious and irreversible ecological change, depriving local populations of the foundations for their health and well-being. Some of these challenges relate to the political, legislative and institutional barriers to addressing environment and health in a coherent and unified manner, especially policies that impact on ecosystem services to human health.

12. Increasingly, the health sector is recognizing the multiple ways in which a changing economic, social, political, and institutional landscape impacts on health status and health services. The drivers for this change include the globalization of economies, the mandates of international treaties, and technology. In this dynamic landscape, focusing solely on technical improvements in health systems is no longer an option – the health sector must be repositioned to cope with a changing world.

3. Proposed actions

13. Governments should recognize the intrinsic linkages between environment and health from the perspective of the vital services that ecosystems provide to human health and well-being, and put in place integrated policies that acknowledge and protect these services.

14. There are no quick-fix solutions to reversing the degradation of ecosystems and their services; solutions require long-term political commitment, concerted action and co-responsibility from different government sectors and civil society. As recommended in the MA report, countries should take steps to deploy mitigation strategies that reduce the underlying causes of ecosystem change, while simultaneously improving human health. They should implement adaptation strategies to reduce the effects of ecosystem disruption on health, addressing direct, mediated and long-term health impacts.

15. A prerequisite would be the setting up of cross-sectoral policy dialogues that will result in coherent national strategic plans with supporting resources. The following strategies of the MA Health Synthesis Report provide a basis for framing policy dialogue and action by governments:

    a) Improvement of intersectoral collaboration among different tiers of government, government departments and the civil society;

    b) Capacity-building initiatives for assessing health and environment linkages, using the knowledge gained to create more effective national policy responses to environmental threats;

    c) Dissemination of knowledge and good practices on health and environment gains achieved from intersectoral policy-making;

    d) Integrated action for health and environment, such as impact assessments of major development projects, policies and programmes, and indicators for health and sustainable development;

    e) Use of the regional economical communities to strengthen the link between the environment and health within countries (advocacy, capacity strengthening, support in activities implementation).

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3.4 Policy frameworks for addressing health and environmental challenges (IMCHE/1/CP4)

Executive summary

The 1992 United Nations Conference on Environment and Development in Rio de Janeiro, also known as the Earth Summit, underscored the important interlinkages that exist between the social, economic and environmental pillars of sustainable development, all of which hinge on good health. The UN Millennium Development Goals also address the important environment–health linkages (Goals 4, 5 and 6), as does the Johannesburg Plan of Implementation for the World Summit on Sustainable Development, which is particularly related to the newly agreed Strategic Approach to International Chemicals Management (SAICM). The New Partnership for Africa's Development (NEPAD)'s Human Resources Development Initiative urges the integration of health and environment policies. In 2002, The WHO Regional Committee for Africa adopted *Resolution AFR/RC52/R3 on Health and Environment: A Strategy for the African Region*, which underlines the links between health, environment and development. Although there is growing recognition among policy-makers in Africa of the close interrelation of health and the environment, in many countries national health-sector policies have been developed separate from those on environment. Planning and service delivery also takes place without deliberate integration. For more effective responses to the health and environment challenges facing the continent, governments in Africa must mainstream the health and environment linkages into national development agendas, and develop the human capacity for assessment, regular monitoring and evaluation of the process.

Acronyms and abbreviations

CEHA Centre for Environmental Health Activities
EMRO Eastern Mediterranean Regional Office, WHO
MDGs Millennium Development Goals
NEHAP National Environment and Health Action Plan
SAICM Strategic Approach to International Chemicals Management
WEHAB Water, Energy, Health, Agriculture and Biodiversity, WSSD
WSSD World Summit on Sustainable Development

1. Background

1. Agenda 21 of the 1992 United Nations Conference on Environment and Development in Rio de Janeiro (the Earth Summit) laid down the foundations for a long-term international policy framework for the environment and sustainable development. Since then, the global push for sustainable development has intensified, resulting in international and national actions, and has cascaded into more specific sectoral policies and instruments.

2. The Rio conference itself resulted from earlier processes. Since 1987, major agreements on health and environment have been reached at more than 20 key international meetings. These meetings have identified several key health issues and challenges, with increasing focus on the need to improve the health of the poor and vulnerable. The meetings held during the last decade or so have also addressed important health and environment linkages and recommended actions ranging from phasing out ozone-depleting substances to addressing the growing threat of hazardous chemicals, wastes and persistent organic pollutants (POPs).

3. Principle 1 of the Rio Declaration on Environment and Development underscores the important interlinkages between the social, economic and environmental pillars of sustainable development, all of which are underpinned by good health. Agenda 21 recognizes these linkages, as well as the complexities inherent in ecosystem dynamics and their interface with human health and livelihoods.

4. The Millennium Declaration that was adopted by the world community also addresses the environment–health linkages. Millennium Development Goal 4 on reducing childhood mortality, Goal 5 on improving maternal health, and Goal 6 on combating major diseases, can only be reached through improvements in environmental health. Water-related diseases such as diarrhoea and cholera kill an estimated 3 million people a year in developing countries, the majority of them children under the age of five; and pollution and heavy physical exertion during pregnancy can make women less fit for childbirth and put them and their unborn children at greater risk of complications during pregnancy and childbirth. DFID/EC/UNDP/World Bank (2002) estimate that up to a quarter of the total burden of diseases in developing countries may be associated with environmental risk factors, and preventive environmental health measures are as important and sometimes more cost effective than treatment.

5. The Johannesburg Plan of Implementation of the World Summit on Sustainable Development (WSSD) has strong elements of environment–health linkages, particularly related to the newly agreed Strategic Approach to International Chemicals Management (SAICM). African countries have been active in coordinating country efforts towards SAICM implementation, and have agreed on regional priorities for health and environment to improve the management of chemicals in order to reach the WSSD goals. The Johannesburg Plan recognizes the need for concerted efforts to integrate health and environment actions, thus providing a framework for policy development. It urges actions to address the causes of ill-health, including environmental causes, and their impact on development, with particular emphasis on women and children. Chapter 6, section 54 calls for the strengthening of the capacity of health-care systems to deliver basic health services to all in an efficient, accessible and affordable manner aimed at preventing, controlling and treating diseases, and for a reduction in environmental health threats.

6. In the Human Resources Development Initiative of NEPAD, in subsection (iv) of the Environment Action Plan, the impact of the environment on health is expressly recognized under paragraph 128, which urges the need to treat health and environment as integral. The action plan explicitly recognizes policy interlinkages,

the inter-relatedness of biophysical and anthropogenic factors, and their influences on human well-being, including health. Although implementing a multisectoral plan through existing sectoral structures at the national level can be challenging, it can open new opportunities for policy integration at the subregional and national levels.

7. In the area of biotechnology, the Biosafety Protocol serves as a supplementary agreement to the Convention on Biological Diversity for ensuring the safe handling and use of living modified organisms (WEHAB Working Group, 2002). Many African countries are parties to this protocol and are expected to contribute to its implementation.

8. In 2002, the WHO Regional Committee for Africa adopted *Resolution AFR/RC52/R3 on Health and Environment: A Strategy for the African Region.* The resolution stipulates that "the regional committee, aware of the intricate links between health, environment and development, concerned about the increasing poor quality of life and the negative health outcomes resulting from neglect and deterioration of the environment in the region…requests member states to *inter alia*, take into account in their national policies and strategies, health problems resulting from the environment." Since then, countries have been moving ahead with the development of national policies for health and environment and related national strategic plans.

9. The design and application of sustainable policies that address the environment–health linkage require a sound understanding of the nature of the political, social and economic frameworks within which these policies and associated tools are to be applied. A case in point is the application of the so-called economic incentives (sometimes called market-based instruments), such as marketable permits to pollute or otherwise stress the environment, charged per unit of stress. Some of these market-based incentives, especially recommended in the wake of economic liberalization in Africa, have not always taken full account of the socioeconomic contexts of African countries.

2. Issues and challenges

10. Policy-makers in Africa need to match their appreciation of the linkages between health and environment with strategic responses to deal with environment-related health issues on the continent (UNEP, 2002; UNEP, 2006). A challenge to this action is the differential standing of environment and health in national development agendas. Whereas health is generally among the top four priority areas in national development strategies, environment remains much lower. As a result of this disparity, any progress made in improving the health of the population is eroded by the impact of environmental-related diseases. Furthermore, the non-existence or ineffective application of policy tools that deal with environmental health issues exacerbates the situation.

11. In urban and rural areas of Africa with high infant mortality the principal interventions ought to be the provision of safe water, sanitation, food security and basic primary health care. This point shows the vital importance of interlinkage

among ministries during the planning and policy-making stages, as well as in service delivery. It is besides essential to focus on the information and the education of the basic communities and the workers handling chemicals in factories in order to increase their awareness regarding environmental and sanitary issues.

12. The extent to which national policies in African countries have been translated into comprehensive national action plans is still unclear. Furthermore the health policy formulation process has mainly evolved within ministries of health, with little or no substantive inputs from environment ministries. In many countries, health policy has been developed in parallel with national environment policies, although the two policies should serve as the basic framework for one other. However, an increasing number of disease prevention and control programmes, both at regional level and national levels, are incorporating health and environment interventions into their packages. This needs to be accelerated.

13. Policy implementation remains a critical issue in Africa. This may be due to the lack of policy review and insufficient well-trained national expertise. Systematic policy evaluations are also often not undertaken. National Environment and Health Action Plans (NEHAPs) are government documents that address environmental health problems in a comprehensive, holistic and intersectoral way. They are normally drawn up in cooperation with a wide range of partners, including professional and technical experts, national, regional and local authorities and nongovernmental organizations. These must be translated into action.

3. Proposed actions

14. The appropriateness of the policy actions taken in response to the health and environment challenges will depend upon the soundness of the knowledge base regarding the state of the environment and the driving forces, pressures, and effects/impacts on health of changes in the environment. As a means to achieving effective responses to health and environmental challenges, governments may wish to consider:

    a) Mainstreaming health and environment linkages in national development strategies and the development agenda, including the implementation of *Resolution AFR/RC52/R3 on Health and Environment: A Strategy for the African Region (WHO, 2002)*;

    b) Strengthening the assessment of environment–health linkages by supporting the National Environment Outlook Reports, incorporating the necessary environment–health issues in demographic and health surveys, and commissioning special studies on key aspects of the health and environmental challenges in which knowledge is deficient;

    c) Instituting periodic assessments of the national institutional capacity for the application of policy tools for resolving health and environmental challenges, and using the results of such assessments to determine the relevance and applicability of policy tools;

d) Undertaking periodic monitoring and evaluation of country performance on the enforcement of existing environmental and health policies and laws;

e) Providing capacity development support to institutions responsible for the enforcement of health and environmental policies;

f) Enabling access to information on various policies by non-government actors and fostering their contribution to the enforcement of the various policy tools in use.

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3.5 Tools and approaches for policy-making in environmental management and public health (IMCHE/1/CP5)

Executive summary

Over the years a number of technologies for the management of environmental risks to human health have been developed. These include plans and technologies for water safety, household water treatment, safe sanitation, vector control (including environmental management), solid and medical waste management, and improved cooking technologies for rural settings. Their successful application relies on a country's capacity to assess risks and potential impacts; develop and implement polices that take into account potential health impacts in addition to costs–benefit considerations; monitor and evaluate the effectiveness of policies and interventions; and engage and communicate with stakeholders. The main challenges seen in most African countries to the broad application of the various technologies revolve around access to relevant tools and the capacity to deliver vital evidence-based knowledge on environment–health linkages. The lack of capacity to efficiently collect, synthesize and interpret technical health and environment data, attitudes towards new technologies, weak impact assessment processes, and unfamiliarity with tools for quantifying health costs and benefits in human and economic terms present additional obstacles. The translation of evidence into policies and programmes is often a complex issue, and legal and regulatory frameworks in Africa remain largely limited or ineffective. It is proposed that governments integrate health and environmental impact considerations into economic development processes; support integrated policy assessment of the health and environment linkages using qualitative and quantitative valuation methodologies; define priorities based on such assessments; identify knowledge gaps; refine normative health and environment standards and guidelines; support local applied research to build technical capacity; and strengthen cooperation among key actors to answer practical policy questions.

Acronyms and abbreviations

EBD	environmental burden of disease
EIA	environmental impact assessment
HELI	Health and Environment Linkages Initiative
HIA	health impact assessment
SEA	strategic environment assessment

1. Background

1. Over the years, technologies for the management of environmental risks to human health have been developed and disseminated. Examples are cost-effective water safety plans and strategies for household water treatment (WHO, 2006a); safe sanitation technologies that can be deployed efficiently and effectively (The HWTS Network, 2008); vector control interventions, including environmental management, that is effective in reducing disease transmission when properly deployed (WHO, 2006b); procedures for waste management; and improved cooking technologies for

rural areas. The "healthy settings" approach has been embraced in many African countries as a sound way to deliver health and environment interventions in an integrated manner.

2. The effective use of the above proven methods relies on country capacities to understand when, where and how these interventions can be deployed, either as part of the broader environmental management programme or as part of public health programmes. Such understanding requires the application of analytical approaches that will provide policy-makers with the necessary evidence to support their decisions.

3. Over the past decade, scientists have made significant progress in measuring the impacts of environmental hazards on human health, by combining the best available monitoring data on levels of exposure to environmental risk factors with the results of epidemiological studies of their effects on various diseases.

4. These environment–health linkages and impacts can be viewed through two main lenses, which are complementary: the lens of environmental risk factors i.e. asking how much disease is caused by a specific environmental hazard, and that of disease outcome, by assessing the proportion of a particular disease that is caused by single or interacting environmental risk factors. However they are viewed, the overall impacts of environment on health are striking.

5. Interactions between environmental conditions and health impacts are characterized by multiple pathways of cause and effect. Policy actors and sectors tend to look at these multiple linkages through a variety of other lenses which include the following:
   (a) *Human settings and economic sectors.* Addressing problems in terms of human settings (e.g. urban, rural, or occupational) can often allow interventions to be better targeted to their beneficiaries, and can stimulate participatory action at the grass roots, for even greater effect.
   (b) *Ecosystems approaches.* The "Ecohealth Framework," also known as the "Ecosystems Approach to Human Health," uses a broad and integrated conceptualization of ecosystems and human health. Ecohealth refers not only to the physical environment or physical disease conditions, but also health and environment linkages in a social, political, and economic context. It particularly promotes social and gender equity and stakeholder participation, and focuses on policy as well as personal and collective behavior. The approach recognizes the heterogeneity of communities, and is especially attentive to vulnerable groups such as women, children, the elderly and other groups that may be socially, politically and economically disadvantaged.
   (c) *Vulnerable populations.* Exposures and health risks from most environmental hazards are very unevenly distributed, often impacting most heavily on specific populations, including women, children, the poor or certain occupational groups. Information on these vulnerable populations can help target policy actions where they will have most effect in promoting health and health equity.

(d) *Evidence collection.* The gathering of relevant evidence is an essential component of the decision-making process. This includes: environment and health monitoring frameworks, providing the data upon which evidence of problems and potential solutions may be based; environment and health standards and multilateral environmental agreements, which set baselines and goals to be achieved; tools for assessing comparative risk/ burden of disease and quantifying environmental hazards in terms of their impact on human life and health; case-study experiences describing good-practice interventions; environment and health indicators that track progress to the goal; and tools for impact assessment.

(e) *Impact assessment:* Whenever a policy decision is made, it can be presumed that decision-makers have made an assessment of potential impacts. Impact assessment is the process link in the chain between evidence and decision-making. Impact assessment provides opportunities to avert/mitigate negative impacts and enhance positive ones (e.g. co-benefits and win-win solutions). It facilitates stakeholder engagement and provides communities with a means of influencing decisions that affect them, and can also be used as an effective "upstream" measure to influence health policies and projects before they are implemented.

6. Over the past 35 years, a great number of impact assessment methodologies have been developed. UNEP and WHO have supported the refinement and application of tools for environmental impact assessment (EIA), integrated assessment (IA), health impact assessment (HIA), and strategic environment assessment (SEA). Overall, there is increased recognition of the value of impact assessment methods that link sectors and disciplines more inclusively. The assessment of linked health and environmental impacts can play a significant role in expanding the narrow focus and frequent shortcomings of sectoral assessment. It also ensures that the direct contributions of ecosystems to better health are duly captured in the decision-making process.

7. Efficiency assessments. Simply describing the health and environment linkages is often not enough to ensure that they are given the required attention when policy decisions are taken. Decision-making can be made more transparent and more responsive to stakeholders concerns when the consequences can be quantified in terms that relate directly to people's lives. There has been important progress in this field in recent years, with the development of methods for measuring, ranking and comparing effects in two important dimensions: (a) human health; and (b) economic costs and benefits:

   (a) *Quantifying population health impacts.* Environmental burden of disease (EBD) assessment is the most comprehensive approach to quantifying the health impacts of environmental risk factors. EBD combines the best available evidence on levels of exposure to an environmental risk factor, the association between the risk factor and specific health outcomes, and the level of the disease it causes in the population.

   (b) *Economic evaluation tools.* Optimizing the use of limited resources is one of the biggest challenges facing any decision-maker. Economic assessment

is therefore a vital tool. It can enumerate the potential costs and value the anticipated benefits of a proposed programme, policy or regulatory initiative, and reflect trade-offs inherent in alternatives. There is increasing recognition that environment and health impacts often require valuation in economic terms in order to receive adequate consideration from policy-makers. An integrated economic analysis of impacts can capture the hidden costs and benefits of policy options, as well as the synergies and institutional economies of scale that may be achieved through complementary policies that support sustainable development.

8. Experiences and lessons learnt from pilot projects converge in recognizing the importance of implementing integrated approaches. The integrated approach in no way downgrades or substitutes itself for the value and relevance of the best available scientific expertise within a specific sector, such as health, the environment or economics. To the contrary, it attempts to provide a framework within which the best available specialist information can have the maximum effect in informing decision-making.

9. A multisectoral integrated assessment is, of necessity, a blend of quantitative and qualitative scientific analyses and of validation through the dynamic process of stakeholder input, participation and dialogue. These should not be handled as separate stages of activity but rather as an ongoing, interactive relationship generating, sharing and using mutually beneficial information.

10. The success or failure of a policy depends, among other factors, on consensus from and a sense of ownership among the impacted community. Local participation can improve the quality of the analysis, design and implementation of any intervention. More importantly, it leaves in place local capacity that can continue and develop the process over time.

2. Issues and challenges

11. Promoting better access to relevant tools and the capacity to provide policy-makers with vital knowledge and evidence on environment–health linkages, as well as potential solutions, remains a formidable political, organizational and logistical challenge.

12. The translation of evidence into policies and programmes is a complex network of tasks, littered with political, institutional organizational and logistical challenges, even in the best of circumstances. In Africa, in particular, the regulatory or policy chain most often breaks down when technical capacity is weak. In addition, legal and regulatory frameworks become limited or ineffective when the impact assessment process is too expensive, too weak or politically driven.

13. The WHO-UNEP Health and Environment Linkages Initiative (HELI), (WHO/UNEP, 2008) conducted a review of decision-makers' needs to identify current gaps on how health and environmental knowledge can be integrated more effectively into policy-making. Although the lack of capacity to efficiently collect, synthesize and interpret technical health and environment data or indicators is cited as a continuing obstacle, problems may extend beyond staff or resource shortages, as detailed below.

a) Attitudes towards new technologies. Data collected by new and unfamiliar technologies (e.g. satellite mappings) in some settings may be viewed as less reliable than traditional expert opinion, and may not be used appropriately.

b) Political versus technical use of indicators. Policy-makers may not refer to the same indicators as scientists. They may refer mostly to a few aggregate economic indicators such as GDP to track the progress of programmes or projects. Some political indicators of progress may be grounded in symbols of social status or power, rather than in scientific evidence.

c) Weak impact assessment processes. In many settings, impact assessment processes are technically weak and thus ineffective as a policy lever.

d) Lack of familiarity with tools for quantifying health costs and benefits in human and economic terms. Burden-of-disease and economic assessments can be extremely effective in describing the impacts of policies, yet these tools are not used routinely in Africa.

e) Policy-to-practice gaps. Policy assessment processes may give insufficient consideration to what practical measures may be needed.

3. Proposed actions

National reports

Technical multidisciplinary committees could facilitate the synthesis of existing country-specific evidence into national reports to support informed policy decisions. Such reports will be prerequisite to future policy review within each interested sector and across sectors. National reports will provide an opportunity to discuss gaps in data and evidence and therefore will lay down the basis for the preparation of national health and environment profiles and outlooks. Harmonization of procedures and approaches across countries will be necessary in order to allow comparability and to assess progress regionally. Specifically, governments may wish to consider:

(a) Promoting health and environment impact considerations as integral to economic development processes;

(b) Developing national technical capacities to apply the presented assessment tools and support evidence-based policy formulation and evaluations;

(c) Supporting integrated policy assessment of health–environment linkages using qualitative and quantitative valuation methodologies;

(d) Coordinating scientific and technical reviews by health and environment experts to define priorities and identify knowledge gaps as well as refine normative health and environment standards and guidelines;

(e) Establishing a mechanism of coordination, but with high level of decision-making and adequate funding, with follow-up and evaluation;

(f) Supporting applied research, particularly at the local level, to build technical capacity, strengthen cooperation among key actors and answer practical policy questions.

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3.6 New and emerging environmental threats to human health (IMCHE/1/CP6)

Executive summary

Whereas Africa continues to cope with traditional environmental risk factors to human health, the continent, in addition, now has to deal with new and emerging environmental challenges to public health, all in a context of strained health systems. Emerging issues are represented *inter alia* by persistent organic pollutants, electronic waste (e-waste), radiation, new occupational risks, and climate change. Over the past 10 years, frequent outbreaks of emerging and re-emerging infectious diseases and mosquito-borne diseases have occurred in Africa. E-waste is a fast-growing concern. There have been significant radiation incidents reported, and new and more toxic substances (dioxins, furans and heavy metals) are creating environmental and health problems and new occupational risks in Africa. The management of hazardous wastes must focus on environmentally sound treatment and/or long-term storage. A renewed and stronger commitment to the implementation of the Stockholm Convention on Persistent Organic Pollutants is needed. In Africa, decision-makers have not always been made aware of new or emerging environmental risks factors, due partly to insufficient environmental monitoring programmes. The awareness of the general public on specific risk factors has also remained low. Many African countries have developed emergency preparedness and response plans in the context of humanitarian responses to crises, with components that address outbreaks of infectious diseases. However, the management of new and emerging environmental risk factors has not been properly addressed. Governments may wish to consider including in their relevant activities the monitoring of new and emerging environmental threats; reviewing their emergency preparedness plans to ensure that the management of new or emerging environmental risk factors has been adequately addressed; developing and implementing awareness-raising campaigns on the most important risk factors; and undertaking community sensitization and education.

Acronyms and abbreviations

DDT	dichlorodiphenyltrichloroethane
e-waste	electric and electronic waste
IARC	International Agency for Research on Cancer
PCB	polychlorinated biphenyl
POPs	persistent organic pollutants
Ir	iridium (atomic number 77)

1. Background

1. While Africa has to cope with traditional environmental risk factors to human health, it also has to face new and emerging environmental challenges to public health, all in a context of strained health systems. Climate change, which drives

the epidemiological transition observed in emerging and re-emerging infectious diseases, is only one of such threats. Other emerging issues include persistent organic pollutants, electronic waste, radiation, and new occupational risks.

2. New emerging environmental threats to human health may arise for a diversity of reasons. For instance, new products and materials manufactured through bio- and nanotechnologies may bring benefits, but also carry unanticipated risks to human health and the environment. There is growing scientific evidence of the risks from low-dose exposure to chemicals at certain vulnerable life stages, increasing levels of industrial effluents, new chemicals, changing ecosystems, and climate change. The publication of new scientific findings leads to a re-evaluation of risks. What is regarded as a new threat in one region of the world may not be so in another, and information sharing, using agreed and harmonized tools for assessment, is prerequisite to fully understanding the risks and applying preventive strategies successfully.

3. Over the past 10 years, frequent outbreaks of emerging and re-emerging infectious diseases have occurred in Africa, outbreaks characterized by high mortality rates. The most important ones have been Ebola, Marburg virus, and tuberculosis. The geographical distribution of mosquito-borne diseases seems to be expanding, as seen from the spread of the West Nile virus, Rift Valley fever, yellow fever and chikungunya, which have severely affected many African countries over the past 3 to 4 years. Avian influenza has also reached Africa.

4. Electric and electronic waste (e-waste) is a fast-growing concern. Whereas there is increasing demand for consumer electronics, the materials used in the manufacture of computers and similar devices may contain and release hazardous chemicals when disposed of. These include lead, tin, barium, beryllium, cadmium and mercury, which cause serious damage to the blood, neurological and reproductive systems. In many developing countries electronic devices are collected, manipulated and dismantled to extract valuable materials for resale (Takker, 2006). Dismantling e-waste is a relatively new phenomenon, resulting in individuals exposing themselves to toxic substances. Takker (2006) estimates that in India, without proper recycling, 315 million computers will release 550 million kg of lead, 900 000 kg of cadmium and 180 000 kg of mercury into the environment. In Africa, there is a lack of consolidated data on this new phenomenon.

5. Furthermore, new and even more toxic substances such as polychlorinated dibenzodioxins and dibenzofurans can be generated and released through improper disposal operations. Other practices that may generate high concentrations of dioxins and furans are thermal copper cable recycling, in which the plastic-coated cables are burned in the open air. Whereas the direct exposure to these chemicals may be localized, the entry of these persistent organic pollutants into the human food chain is of major concern.

6. The rapid growth of the information and communication technologies market is focused primarily on new niche products and the replacement of equipment. The replacement of portable computers and mobile telephones represents a fast-growing global problem of e-waste as a municipal waste stream. Uncontrolled burning, disassembly, and disposal of electronics in and next to water sources may

cause environmental and health problems for those involved in the handling of the e-waste, or living close to where such waste is discarded.

7. Until recently, radiation incidents have not been a priority concern in Africa. However, in the past two years two incidents of significance have been reported: In August 2006, between Senegal and Côte-d'Ivoire, a radiological incident involving the transportation of gammagraphy equipment containing Ir-192 source; and in November 2007, in the Democratic Republic of Congo, the dumping of mining waste containing radioactive material into a river whose water is used for drinking/household needs by the local population. The extent to which radiological incidents may have occurred in Africa in not known with certainty.

8. Heavy metals such as mercury still have many applications, including their use in measuring devices (such as thermometers), electronic switches, lamps, cosmetics, artisanal mining and other industrial processes. Mercury and lead are used extensively in batteries. As heavy metals cannot be destroyed, the management of waste containing these must focus on environmentally sound long-term storage.

9. The Stockholm Convention on Persistent Organic Pollutants (POPs) came into effect in 2004, banning the use of 12 chemicals including DDT, PCBs, furans and dioxins. There are proposals for the Convention to be extended to cover 11 additional chemicals, some of which are still in use in Africa. African countries and other developing countries have initiated the development of national implementation plans. Their implementation largely depends on technical and financial assistance from developed countries. Four years after the entry into force of the Convention, 45 African countries have become parties with 20 completing the preparation of national implementation plans (http://www.pops.int). The full impact of the Convention on the reduction of POPs in African countries remains a challenge, and many POPs, such as DDT, continue to be used. The use of DDT for malaria control doubled in Africa between 2000 and 2006 (WHO, 2007), primarily because suitable and equally cost-effective alternatives are not available. A renewed and stronger commitment to the implementation of the Stockholm Convention on POPs is required.

10. New occupational risks have emerged in Africa as a result of the expansion in the production and use of chemical, electronic, bio- and nano-technologies. Furthermore, the liberalization of trade facilitates the transfer of technologies and chemicals, some of which are potentially hazardous, but this usually done without the necessary protective measures. This adds to the burden of traditional occupational health problems such as injury, respiratory diseases, dermatitis, and musculo-skeletal disorders. African workers now suffer increasingly from asthmatic conditions and psychological stress. Agriculture, mining, work in export processing zones, and child labour continue to be of particular concern.

2. Issues and challenges

11. In Africa, decision-makers have not always been made aware of new or emerging environmental risks factors. This is partly because environmental monitoring is yet to be routinely implemented. There is a need to leverage the environment sector's role and comparative advantage in the assessment and understanding of the root causes of emerging risk factors and the identification of effective solutions for their containment, through maintaining the resilience of ecosystems to human pressure. Challenges include the low priority given to such issues on development agendas, inadequate scientific and analytical capacity in monitoring, assessing and reporting on environmental trends, lack of clear programmatic environmental agendas, and competing priorities related to current and traditional risk factors, among others.
12. The awareness of the general public on specific risk factors has remained low, including in occupational settings where standard protective measures against various forms of contamination, including radiation, are not applied consistently. Cultural and behavioural backgrounds and poverty expose poor communities to specific risks factors such as infectious diseases and hazardous waste.
13. Many African countries have developed emergency preparedness and response plans based on humanitarian actions in crisis situations, with components that address outbreaks of infectious diseases. Natural disasters have usually been considered under such plans. However, the management of new and emerging environmental risk factors has not been properly addressed.
14. Regarding emerging threats such as e-waste, the necessary assessments have so far remained limited to the quantification of the extent of the problem in order to propose the related interventions. Other potential hazards like radiation have been inadequately addressed in plans and interventions.

3. Proposed actions

15. The establishment by governments of intersectoral frameworks and mechanisms with their supporting technical committees will enable the systematization of environmental monitoring in Africa. Governments may wish to consider:
    a) Including the monitoring of new and emerging environmental threats in their activities. While prioritizing current and traditional risk factors, the monitoring should also include the assessment of the potential and relative threats posed by new and emerging risks factors to public health;
    b) Reviewing their emergency preparedness plans to ensure that the management of new or emerging environmental risks factors have been adequately addressed;
    c) Developing and implementing awareness raising campaigns on the most important risks factors;
    d) Undertaking community sensitization and education activities, particularly in the areas most affected by specific risks, or targeting population groups that are most vulnerable.

4. References

WHO (2002). *World health report: Reducing risks, promoting healthy life*. World Health Organization, Geneva.

Harrad S Ibarra, Diamond M, Melymuk L, Robson M, Douwes J, Roosens L, Dirtu AC, Covaci A et al. (2008). Polybrominated diphenyl ethers in domestic indoor dust from Canada, New Zealand, United Kingdom and United States. *Environment International*, 34, 232–238.

Takker N (2006). India's toxic landfills: a dumping ground for the world's electronic waste. *Sustainable Development Law and Policy,* VI (3).

The Stockholm Convention on Persistent Organic Pollutants (2004) (http://www.pops.int).

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3.7 International legislative and regulatory frameworks (IMCHE/1/CP7)

Executive summary

Over the past two decades, legislative and regulatory frameworks have been developed that address environment–health linkages. In the area of chemicals control alone, separate binding agreements (Rotterdam, Stockholm and Basel Conventions) co-exist with non-binding agreements such as the Global Harmonization System. A new initiative known as the Strategic Approach to International Chemicals Management (SAICM) addresses the growing gaps between the capacities of different countries to manage chemical safety. However, the extent to which these instruments have been streamlined within existing national legislation has not been formally documented. It is apparent that these instruments are not currently deployed or adequately equipped. The dumping of hazardous substances in the city of Abidjan, Côte d'Ivoire in August 2006, demonstrated sharply the need for the recognition of the inextricable link between health and the environment at all levels, and for coordinated actions. This unfortunate occurrence revealed weaknesses in the international and national regulatory mechanisms and their implementation, and brought to light institutional and operational deficiencies and a dramatic lack of capacity to manage hazardous wastes in an environmentally sound manner. The need for an integrated institutional framework addressing human health and the environment cannot be overstated. The Revised International Health Regulations (2005) now being implemented in all African countries provides a more cohesive approach to health and environment risk management. Despite the many efforts undertaken by African countries, the level of awareness and understanding of these environmental agreements among country-level policy-makers remains limited. In order to facilitate a coordinated national implementation of conventions and international agreements that relate to health and the environment, governments may wish to consider establishing intersectoral mechanisms to monitor and to make policy proposals for the implementation of existing and future conventions and international agreements, and build their local capacity to raise awareness on these instruments.

Acronyms and abbreviations

GEO	Global Environment Outlook
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
IHR	International Health Regulations
POPs	persistent organic pollutants
SAICM	Strategic Approach to International Chemicals Management

1. Background

1. Environmental influences on human health are governed through a number of local, national, regional and international legislations. These include laws to prevent water, soil, air and noise pollution; developmental or land use planning laws; laws governing health, sanitation, occupational health and safety; laws concerned with

radiological exposure, food-borne toxins, pesticides and pharmaceuticals; and trade and transportation laws.

2. The existing legislation and regulatory frameworks in many African countries were developed soon after independence, based heavily on the laws of colonizing countries. Today, many of these traditional legislative frameworks are no longer appropriate for dealing with the unanticipated effects of environmental risks to human health, particularly chemicals on biological systems.

3. Chemicals remain one of the most regulated areas in all countries. National laws generally require the registration of pesticide formulations before they can be marketed for use on specific crops, and set out limits of concentrations of chemicals in a specific medium, in order to minimize the risks they pose. The area of chemicals control illustrates the many lessons learnt as developed economies have grappled with the emergence of new and unfamiliar hazards in establishing or developing their legislative framework. It also demonstrates an area where challenges remain for developed and developing countries alike, and where opportunities exist to strengthen health and environment linkages. For instance, the Strategic Approach for International Chemicals Management (SAICM) provides a major impetus to the development and implementation of strengthened chemicals-related legislation through a multisectoral approach.

4. Over the past two decades, legislative and regulatory frameworks have been developed in the context of a growing and active environmental consciousness. This has been particularly true for a diversity of global multilateral environment agreements, such as the Vienna Convention; the Montreal Protocol; the Convention on Biodiversity and related Protocol; the Basel Convention; the Stockholm Convention; the Rotterdam Convention and the Revised International Health Regulations. The Bamako Convention is an example of a regional-level framework.

5. The number of these conventions and agreements and their broad ratification in recent years has been remarkable. In the area of chemicals control alone, three separate binding agreements exist (Rotterdam, Stockholm and Basel Conventions) together with non-binding agreements such as the Globally Harmonized System for the Classification and Labeling of Chemicals (GHS). The new Strategic Approach to International Chemicals Management (SAICM) has been adopted at the global level in recognition of the growing gaps between the capacities of different countries to manage chemicals safely, the need to improve synergies between existing instruments and processes, and a growing sense of urgency regarding the need to assess and manage chemicals more effectively to achieve the 2020 goal articulated in paragraph 23 of the Johannesburg Plan of Implementation.

6. African countries have been active in the negotiation processes of these conventions, and their contribution in the development process has also been remarkable. Most of the countries have further become parties to these conventions through ratification. However, their enforcement of these instruments remains challenged by a lack of adequate and predictable resources. Moreover, the extent to which these instruments have been streamlined within national legislations has not been formally documented. But it is apparent that these instruments are not

currently deployed and adequately equipped to fully serve their purpose within African countries.

7. Today in Africa, some industrial chemicals such as arsenic, cadmium, lead and mercury, which are heavily controlled or withdrawn in developed countries, continue to be used, with major environmental and health consequences. African farmers use large amounts of chemical pesticides. And as much as 50 000 tonnes of obsolete stockpiles of pesticides contaminate soil, water, air and food both for domestic consumption and export.

Case study - The Probo Koala incident: the costs of inaction

The dumping of hazardous substances in the city of Abidjan, Côte d'Ivoire in August 2006, serves to demonstrate the need to recognize and reinforce the inextricable link between health and the environment at all levels.

In the early hours of 21 August 2006, residents of several parts of the city awoke to a thick and suffocating smell. It was discovered that 528 cubic metres of wastes derived from the ship *The Probo Koala* had been dumped at a number of sites around the district of Abidjan. Such wastes were found to contain highly concentrated hydrogen sulphide, sodium hydroxide and mercaptans. This incident had huge consequences for human health and the environment.

Seven people are reported to have died and more than 44 000 have sought medical treatment as a result. To respond to the medical needs of the victims of this incident, a medical response system was gradually put in place in the district of Abidjan in 32 sanitary centres, backed by 20 mobile medical units to attend to those exposed to the toxic wastes, who had general, neurological, respiratory, digestive, visual and skin disorders. The Government of Côte d'Ivoire's preliminary estimate of the associated financial implications of this emergency, in respect of losses sustained to the economic, social, environment and health sectors, amounted to US$ 130 million.

This incident illustrated that there exist gaps in the international, and corresponding national regulatory mechanisms and their implementation. Such gaps are presently under consideration among the relevant intergovernmental organizations, as a means to secure political and regulatory cohesion to prevent and deal with such occurrences in future. Such concerted decision-making may be achieved through the recognition of the linkages between human health and the environment. The Basel Convention's primary objective is the protection, by strict control, of human health and the environment from adverse effects that may result from the generation and management of hazardous wastes. To this end, the Convention is underpinned by the notion of "environmentally sound management," which entails taking all practicable steps to ensure hazardous wastes are managed in a manner that will achieve this primary objective. The protection of human health and the environment reflect a common goal, which should be pursued jointly. This joint pursuit should similarly be extended in the implementation of other international instruments, thus allowing for a comprehensive legislative framework.

The incident in Côte d'Ivoire also brought to light institutional and operational deficiencies, as well as a dramatic lack of capacity to manage wastes in an environmentally sound manner. The National Commission of Inquiry on Hazardous Wastes in the District of Abidjan, in considering the response to this incident, concluded that there were deficiencies in organization and control on the part of the administrations concerned, illustrating weaknesses in the mechanisms for delegation, execution, coordination and control of authority. The Commission also found that there were insufficient regulations, and the people responsible lacked an understanding of the relevant laws and procedures. Furthermore, there was no emergency response plan and shortcomings in the information flow between the relevant national administrations, including a failure to observe the administrative hierarchy, also came to light and served to impede an expeditious response to this incident.

Such findings thus demonstrate the need for an integrated institutional framework addressing human health and the environment, which will effectively respond to such incidents. This might be achieved through the establishment of health and environmental coordination units, which fosters a culture of information exchange and mutual support between differing administrations.

In pursuing coherence between health and environmental considerations on chemicals and wastes, such coordination units might be tasked with information gathering, risk assessment, monitoring and response. This might also be achieved through the establishment of poison control centres in key locations which would allow for the consequences of the mismanagement of chemicals and wastes on health and the environment to be addressed in concert.

2. Issues and challenges

8. The rapid development of international and national regulations to do with health and the environment has led to a complex and often fragmented set of arrangements with numerous requirements at national and international levels. However, the Revised International Health Regulations (2005) now being implemented in all African countries provide a more cohesive approach to health and environment risk management, and require countries to strengthen their surveillance, notification and response mechanisms for all events of international concern.

9. The UN reform process emerged in part from a growing concern that all too often, the global agenda and national actions falter as a result of institutional rivalries, potentially leading to a waste of resources and duplication of efforts. Identifying interlinkages offers opportunities to enhance the coordination and synergy among the existing legal instruments. This can ensure greater implementation effectiveness and maximize the use of limited resources, increase the impact in decision-making and strengthen the necessary capacity building for implementation at the country level. Such processes will remain key to the success of international and national legislative frameworks.

10. The effective implementation of international conventions is not coordinated at national and regional levels This implementation requires that the policies of the health and environment sectors are aligned with each other, and that there exist strong institutional mechanisms that allow effective collaboration among different sectors. This can only occur if the health sector is informed of the provisions and objectives of these conventions and based on this, delineate the critical role it should play in their implementation. Furthermore, collaboration across legislative frameworks can strengthen the integration of environmental concerns into the development agenda.
11. Despite the many efforts undertaken by countries themselves and the various convention secretariats, the level of awareness and understanding of these environmental agreements within country-level policy-makers remain limited. Furthermore, the necessary intersectoral collaboration mechanisms, where they exist, are weak. There are still – as evidenced by the DDT issue in certain countries – conflicting policies between health and environment that continue to impact negatively on implementation, while this could be avoided by creating win-win situations through mutually developed holistic approaches.

3. Proposed actions

12. In order to facilitate coordinated national implementation of conventions and international agreements that bear on health and environment, governments may wish to consider:
    a) Establishing intersectoral mechanisms and strengthening the existing ones to monitor and make policy proposals for the implementation of existing and future conventions and international agreements, supported where necessary by technical expert subcommittees;
    b) Establishing, where appropriate, national focal points to act as the principal interlocutors with the respective secretariats of conventions and international agreements; these focal points would form a component part of the national intersectoral coordination mechanism;
    c) Building the local capacity in the conventions and international agreements related to health–environment interlinkages, and facilitating reporting to raise public awareness;
    d) Establishing more effective mechanisms for the implementation and enforcement of national legislation and regulations.

4. References (Main international environmental agreements)

1971: The Ramsar Convention on Wetlands (http://www.ramsar.org/)

1972: Convention Concerning the Protection of the World Cultural and Natural Heritage (http://whc.unesco.org/archive/convention-en.pdf)

1973: The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (http://www.cites.org)

1973: International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78) (http://www.imo.org/Conventions/contents.asp?doc_id=678&topic_id=258)

1982: United Nations Convention on the Law of the Sea (http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm)

1985: Vienna Convention for the Protection of the Ozone Layer (http://ozone.unep.org/)

1987: The Montreal Protocol on Substances that Deplete the Ozone Layer (http://www.unep.ch/Ozone)

1988: Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (http://www.basel.int/)

1991: Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (www.iss.co.za/AF/RegOrg/unity_to_union/pdfs/oau/treaties/*Bamako_Convention.*pdf)

1992: Convention on Biological Diversity (http://www.cbd.int/convention/)

1994: United Nations Framework Convention on Climate Change (1994) (http://unfccc.int/2860.php)

2000: The Cartagena Protocol on Biosafety (2000) (http://www.cbd.int/biosafety/)

1994: United Nations Convention to Combat Desertification (http://www.unccd.int/)

2001: Stockholm Convention on Persistent Organic Pollutants (http://www.pops.int)

2002: The Globally Harmonised System for Classification and Labelling of Chemicals (http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html)

2004: *Rotterdam Convention* on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (http://www.pic.int)

2005: The Kyoto Protocol to the United Nations Framework Convention on Climate Change on Reducing Levels of Carbon Dioxide and Five Other Greenhouse Gases (http://unfccc.int/resource/docs/convkp/kpeng.html)

2005: International Health Regulations (2005) (http://www.who.int/csr/ihr/WHA58-en.pdf)

2006: The Strategic Approach to International Chemicals Management (SAICM) (2006) (http://www.chem.unep.ch/saicm/)

3.8 Health impact assessment (IMCHE/1/CP8)

Executive summary

The links between development, environment and health are as pronounced in Africa as they are elsewhere. Yet Africa is unique by virtue of its sizeable number of endemic communicable diseases with strong links to the environment, and the relative fragility of the continent's ecosystems. Health impact assessment (HIA) provides an important decision-making tool through which health issues can be addressed upstream in development planning and design. Like the other members of the impact assessment family, it proposes a systematic process to screen, scope, assess, appraise and formulate management plans to address key issues in development project implementation. While most African countries have a framework for environmental impact assessment (EIA), few have adequate capacity for HIA, which is still at a relatively early stage of development compared to other types of impact assessment globally. Partly because the importance of HIA is not yet well understood by policy-makers in Africa, the tool has not been used to support development processes, including large-scale infrastructure projects. In addition to the lack of awareness of HIA, low technical competencies and inadequate institutional arrangements hinder the application of the process in Africa. The development of national HIA capacity building is the main means through which to respond to these challenges. It is recommended that African health and environment ministers put in place HIA capacity building processes. As first steps, health and environment ministries should establish strategic alliances around issues of HIA, carry out a needs assessment for HIA capacity building, analyse the current EIA policy and legal frameworks, and engage in the HIA capacity building package of WHO and partners.

Acronyms and abbreviations

EIA	environmental impact assessment
HIA	health impact assessment
IAIA	International Association for Impact Assessment
UNEP	United Nations Environment Programme
WHO	World Health Organization

1. Background

1. The links between development, environment and health are as pronounced in Africa as they are in other continents. Yet Africa is unique by virtue of the high levels of endemicity seen in a number of communicable diseases with strong links to the environment, and the relative fragility of its ecosystems.
2. The development of natural resources, urban development and the expansion of transport systems and other infrastructure all precipitate changes to environmental and social determinants of health. The resulting health outcomes can be negative or positive. Sometimes, dramatic adverse impacts on health have been observed in

Africa. The construction of various mega-dams in the 1960s, 70s and 80s provides relevant examples. Impacts have included increased infectious disease burdens, malnutrition, and psychosocial disorders. Remedial measures have been costly, and the additional burden on already strained health services represents a transfer of hidden costs of development to the health sector (Birley, 1995).

3. Health impact assessment (HIA) provides an important decision-making tool through which health issues can be addressed upstream in development planning and design. Like the other members of the impact assessment family, it proposes a systematic process for screening, scoping, assessing, appraising and formulating management plans to address key issues in development project implementation. While most African countries have a framework for environmental impact assessment (EIA), few possess adequate capacity for HIA.

4. A range of factors – the environmental and social determinants of health – affect community health and it is these determinants that are affected by development decisions. Often the key players in development planning and implementation are much better resourced than the health sector. HIA aims to predict the changes in these determinants, as a basis for informed decision-making on safeguards and preventive measures.

5. The 1999 WHO definition of HIA (WHO European Centre for Health Policy, 1999) has recently been elaborated as "*A combination of procedures, methods and tools that systematically judges the potential and sometimes unintended effects of a policy, plan, programme or project on the health of a population and the distribution of those effects within the population. HIA identifies appropriate actions to manage those effects*" (IAIA/WHO, 2006).

6. In addition to prompting maximum health in the population, four values are particularly important for HIA (WHO European Centre for Health Policy, 1999; Kemm et al., 2004): democracy, equity, sustainable development and ethical use of evidence.

7. Water resources development is a case in point. Africa has only 9% of global freshwater resources (4050 km^3/year) (UNEP, 2003) and these resources are geographically unevenly distributed. Moreover, rainfall patterns show a high degree of variability in time and space. Compared to other continents, Africa's unevenly distributed water resources have been developed to only a limited extent. Some of the largest dams in the world are located in Africa, but about 50% of them are found in the Republic of South Africa. Irrigation schemes are grouped in large clusters, such as the Gezira scheme in the Sudan and the Office du Niger in Mali.

8. The burden of water-associated diseases in Africa is also disproportionately high compared to other continents. The prevalence and incidence of diseases linked to aquatic ecologies are influenced by hydrological changes that occur when water resources are developed and managed. It has been documented that 90% of the global burden of malaria and of schistosomiasis affects the population of sub-Saharan Africa, with some other water-related vector-borne diseases of a more subregional significance also appearing as important public health issues.

9. Recent meta-analyses of the association between water resources development and endemic water-associated vector-borne diseases (malaria, lymphatic filariasis and schistosomiasis) confirmed such links, but at the same time highlighted the complexities of determining factors, parameters influencing community vulnerability, environmental receptivity and institutional weaknesses, and uncertainties stemming from gaps in knowledge and evidence (Erlanger et al., 2005; Keiser et al., 2005; Steinmann et al., 2006).

10. The potential for freshwater resources development in Africa is considerable and it can be expected that such development will accelerate to meet the needs of a growing population. The resulting changes in environmental and social determinants of health will have important repercussions for affected and vulnerable communities, if human health is not considered at the earliest planning stage.

11. Similar arguments can be made for policies, programmes and projects of other types of development: the health dimensions of the decisions in the energy, agriculture, transport, mining and other sectors can be managed equally successfully according to these principles.

12. A number of illustrative examples from the water resources sector will help in visualizing the nature and magnitude of health issues associated with water resources development:

    a) The oldest well-documented case is that of the Akosombo dam, built on the Volta River in Ghana in the early 1960s. The resulting man-made lake with particularly long shorelines attracted many resettlers, lured by the important fishing opportunities that arose in the immediate, eutrophic phase after the creation of the reservoir. The prevalence of schistosomiasis among adult lake-side dwellers, however, rose from 1.8% to 75% (and among children even to 100%) over a short period after the dam's impoundment was completed (Cernea and McDowell, 2000).

    b) More than 20 years later, the same observations were made with respect to the rice farming communities in the Richard Toll area of the Senegal River Basin, after the construction of the Diama dam. This dam stops the inflow of saline water, an intrusion of often several hundred kilometres upstream during the dry season, allowing the exploitation of rich agricultural soils. A health impact assessment was done, but in the absence of the intermediate snail host species *Schistosoma mansoni*, schistosomiasis (bilharzia) was not considered an important risk. Once irrigated rice and sugar cane production started, however, schistosomiasis prevalence in the local population shot up to 100% (Southgate, 1997).

    c) Less well known, though also linked to the development of the Senegal River Basin, is the health impact of the Manantali dam in Mali. This dam was constructed in the 1980s but remained without its turbines for at least a decade because of financing problems. The farmers down-stream of the dam, who practised recession irrigation (i.e. rapid crop cultivation on most river plains once the rainy season flood waters had receded) had to give up this tradition, as they were promised irrigation schemes with pumps powered by

the electricity generated by the dam. As the transition period extended over many years – as a result of the problems with the turbine installation – these communities suffered severe malnutrition since their source of livelihood had been eliminated.

13. Such health effects are not limited to spectacular large dams. As a study in Ethiopia pointed out (Ghebreyesus et al. 1999), a conglomerate of many small dams can have a substantive impact on health; in one particular case the transmission level of malaria increased seven-fold following the construction of many small dams. A strategic impact assessment approach could have forecast this and could have been a basis for the design of safeguards and prevention measures.

14. Large irrigation schemes such as Gezira in the Sudan (Bell, 1999) and Office du Niger in Mali (Sissoko et al., 2004) also have a track record of adverse health impacts. In some cases environment–disease links may not be the obvious ones. The impact of rice irrigation development in the Rusizi Plains of Burundi was followed by an extension of the transmission season of malaria, not because there were more breeding sites per se, but because the increased ambient humidity supported greater longevity of the mosquito vectors and thus enhanced their vectorial capacity (Coosemans, 1985).

15. Finally, and perhaps most importantly, there is a history in Africa, be it small, of non-health sector interventions that have been successfully deployed to reduce health risks related to certain development undertakings. A striking example is the work carried out under the auspices of copper mining companies in Zambia (then Northern Rhodesia) in the 1930s. A full package of infrastructural works, house screening and other environmental management approaches managed to reduce the mortality, morbidity and incidence rates of malaria by between 70% and 95%. Retrospective analyses also showed the high level of cost-effectiveness of this approach (Utzinger et al., 2001).

2. Issues and challenges

16. Health impact assessment is a key planning tool to address development-related health issues in a systematic and evidence-based manner. Whether carried out in the context of environmental impact assessment or as a distinct procedure, HIA should result in a public health management plan that combines the implementation of infrastructural and operational measures integrated into the project, the strengthening of health services to address the residual increased health risks, and intensified monitoring of both community health status and the compliance of other sectors with the health measures agreed upon. More detailed information on HIA can be found in a joint WHO/IAIA position paper, at: www.iaia.org/modx/assets/files/SP5.pdf.

17. HIA is still at a relatively early stage of development in comparison with other types of impact assessment, such as environmental impact assessment (EIA), particularly in Africa. There is a need, therefore, to strengthen the role of health in various impact assessment processes, such as EIA and strategic environmental assessment (SEA), as well as to encourage the development of HIA in its own right. Linked to

this, there is also a need to develop criteria to decide on the level of integration between HIA and other types of impact assessment. Investing in HIA is justified by four compelling arguments: economics, equity, best public health practice and good governance, all of which are required for policy implementation based on principles of sustainable development (Bos et al., 2003).

18. The HIA process consists of procedures (a sequence of steps that need to be systematically applied and that are overseen by a regulator) and methods (for each step, specific methods have been developed that can be applied in relation to the specific conditions for a given HIA). Procedure is about management while method relates to technique, which may include screening checklists and frameworks. The basic steps of the procedure have been described in detail (Bos et al., 2003; Kemm et al., 2004). However, as these procedures are not yet well understood by policy-makers in Africa, they have not been applied to support development processes, particularly large-scale infrastructure projects. The underlying factors include the lack of awareness of policy-makers, lack of technical competencies, and weak institutional arrangements.

3. Proposed actions

19. The main process proposed to respond to the HIA challenge in Africa is the development of national HIA capacity. The World Health Organization, together with the Centre for Health Research and Development (DBL), University of Copenhagen and the German Internationale Weiterbildung und Entwicklung (gGmbH) (Capacity Building International) are offering a comprehensive HIA capacity building package with policy development, institutional strengthening, guidelines development, skills development, in-service training, pilot HIAs and e-learning as its key components.

20. When governments decide to embark on this process, the HIA capacity building package can be adapted. The package is therefore delivered at the national level, starting with a national workshop for staff from the ministries of health, environment and planning. As a concrete output, the workshop leads to the establishment of an HIA task force in the country. It also serves to map out the HIA capacity building needs specific to the country's needs, and prioritizes the sequences of subsequent capacity building activities to be implemented.

21. It is recommended that African ministers of health and of environment consider engaging in HIA capacity building for the reasons outlined in this paper. In addition to these global reasons, in the African context the New Partnership for African Development (NEPAD), an initiative by African leaders to solve the problem of under-development, poverty and marginalization of Africa in the 21st century, provides another important vehicle to promote HIA.

22. African ministers of health and of environment should build a strategy for a harmonic response to health and environment issues in the context of NEPAD and promote development in Africa through good governance, using HIA and EIA as tools to deliver this harmonization.

23. As first steps, ministries of health and environment should establish a strategic alliance around HIA, carry out a needs assessment for HIA capacity building in their country, analyse the current EIA policy and legal framework in their country, and engage in the HIA capacity building package of WHO and its partners.

24. An African Knowledge Network on health impact assessment should be established to support the implementation of high-quality HIAs, clarifying competencies and quality standards.

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3. 9 Health risks from climate change (IMCHE/1/CP9)

Executive summary:

Public health within the African region is already severely impacted by climate variability. The major health effects include, but are not limited to, variability in agricultural production and food availability leading to undernutrition, variability in the transmission of malaria, diarrhoea and other vector, water, and air-borne diseases, and negative health impacts from water scarcity and natural disasters such as floods and droughts. Anthropogenic climate change threatens to further worsen environmental conditions, and exacerbate health vulnerabilities that are common in the African region. This includes increasing risks of climate extremes, reductions in the availability of food and freshwater, more unpredictable, and probably more favorable, conditions for the transmission of many infectious diseases, and sea-level rise impacting on the health and well-being of coastal communities.

A strong and coordinated effort to strengthen health protection in response to climate variability and change could minimize or avoid many of these health risks. Responding to the health risks posed by climate variability and change is beyond the capacity of any one agency or sector. These are also regional and global challenges, calling for shared responsibility between nations. There is therefore a need for greater intersectoral, regional and global collaboration to support the identified needs of the health community to protect and prepare for the likely health impacts of climate variability and change. These efforts should build upon the existing national and regional capacities for the management of climate-related health risks.

In line with recent international agreements, including the 2008 World Health Assembly resolution on climate change and health, a recent regional workshop proposed a framework for action to protect health from climate variability and change within Africa. This is focused on five main focal areas: (1) Awareness-raising to place health concerns at the centre of national, regional, and international action on climate variability and change; (2) Development of informed adaptive strategies at all levels which minimize impacts of climate variability and change on population health, integration of these strategies into both health and climate change adaptation plans and programmes, and building capacity and human resources to implement them; (3) Engagement of the health sector in development strategies in order to protect and promote health through actions taken by other sectors; (4) Strengthening of the institutional capacity of the health and the environment communities to provide guidance and leadership on health protection from climate change; (5) Ensuring access to adequate financial resources to support the necessary actions by the environment and the health community.

Acronyms and abbreviations

CO_2	carbon dioxide
IPCC	Intergovernmental Panel on Climate Change
NASA	National Aeronautical and Space Administration (USA)
WHO	World Health Organization
WMO	World Meteorological Organization

1. Background

1. Weather and climate are among the most important influences on both the natural world, and on human well-being. Weather (short term variations in meteorological conditions) affects health through extreme events, such as heatwaves, floods, droughts and storms and air quality, affecting respiratory diseases. Climate (long-terms averages of weather conditions) influences the fundamental environmental determinants of health, including the availability of fresh water and adequate food, the transmission intensity and distribution of many infectious diseases, and the rate of sea-level rise, impacting on the health and well-being of many coastal communities (WHO, 2008).
2. The global climate is now changing rapidly. The Earth's surface has warmed by more than 0.8 °C over the past century and by approximately 0.6 °C in the past three decades (NASA, 2008). This warming is associated with more extreme weather conditions such as intense floods and droughts, heavier and more frequent storms, and a possible increase in frequency and intensity of the El Niño Southern Oscillation, which exerts strong effects on weather conditions over much of Africa.
3. There is now a clear, global scientific consensus that these changes are largely caused by human activities and behaviors, mainly the burning of fossil fuels releasing carbon dioxide (CO_2) and other greenhouse gases that trap heat within the atmosphere. Globally, the main sectors contributing to climate change are energy (X%), transport (Y%), etc. Africa contributes much lower emissions in total than other regions, and on a per capita basis, each African contributes only Y% of the greenhouse gas emissions of the most highly polluting countries. Within Africa, deforestation, driven both by the immediate needs of local populations, and for economic gain, is among the most important contributors to greenhouse gas emissions.
4. These emissions continue to rise, and climate models project that the average land-surface temperature in Africa will rise by 3-4 °C over the 21st century (IPCC, 2007). If these changes do occur as projected, they are likely to have significant impacts on the environmental determinants of health.
5. In the long term, climate change can be limited through development and energy choices that reduce the use of fossil fuels, and that protect tropical forests and other natural ecosystems that absorb greenhouse gases from the atmosphere. However, some degree of natural climate variability occurs independently of human influence, and even if greenhouse gas emissions were abruptly capped today, past emissions

of greenhouse gases ensure that some degree of additional climate change is now inevitable.

6. There is therefore a need for sustained effort both to mitigate the extent of climate change, and to implement adaptive policies to protect populations from the most severe and inevitable negative effects of both natural climate variability and anthropogenic climate change.

2. Issues and challenges

7. The health risks posed by climate variability and change are significant, widely distributed, and difficult to reverse. Climate-sensitive risk factors and illnesses are currently among the most important contributors to the burden of disease in Africa; these include undernutrition, diarrhoea and malaria. On a per capita basis, Africa suffers the highest burdens of all of these diseases (WHO, 2006).

8. Public health security within the African region is particularly sensitive to climate, and is already severely impacted by climate variability. The major health effects include, but are not limited to, variability in agricultural production and food availability leading to undernutrition, variability in the transmission of malaria, diarrhoea and other vector, water, and air-borne diseases, and negative health impacts from water scarcity and natural disasters such as floods and droughts.

9. Human-induced climate change threatens to further worsen environmental conditions, and exacerbate health vulnerabilities that are common in the African region. This includes increasing risks of temperature and precipitation extremes, reductions in the availability of food and freshwater, and more unpredictable, and probably more favorable, conditions for the transmission of many infectious diseases. Long term effects include the loss of biodiversity, which is essential to maintaining ecosystem services, such as provision of foods and medicinal plants.

10. Health impacts will be disproportionately greater in vulnerable populations. People at greatest risk include the very young, the elderly, and the medically infirm, and those already living in places, and in conditions, that are vulnerable to the impacts of natural disasters. In addition, low-income populations where undernutrition is widespread, education is poor, and infrastructures are weak, will have most difficulty adapting to climate change and related health hazards (Confalonieri et al., 2007).

11. A strong and coordinated effort to strengthen health protection in response to climate variability and change could minimize or avoid many of these health risks, at the same time as bringing immediate improvements in current health status. However, responding to the health risks posed by climate variability and change is beyond the capacity of any one agency or sector.

12. Significant gaps have been identified across the Africa region, which necessitate increased knowledge and heightened awareness about climate risks to health. There is a lack of basic information, including collection of environmental and health data and epidemiological research studies, to attribute health effects to climate change, and to carry out risk assessments for future impacts. There is a need for collaborative partnerships to strengthen professional skills to understand and apply

climate and environmental information generated outside the health sector to health decision-making; and to appropriately and adequately communicate climate related health risks to a range of audiences.

13. Existing health systems already provide substantial protection against risks arising from climate variability and change. In addition, local communities often have substantial capacity to adapt through the use of indigenous knowledge, for example through changing agricultural practices to maintain food security in response to climate variability. However, health systems often have major existing weaknesses, and there are limits to the coping capacity of local populations. The anticipated impact of climate change on fundamental health determinants in Africa is expected to strain or overwhelm these capacities in many areas. There is an urgent need to improve assessment of the capacity of health systems to cope with additional burdens of climate-sensitive health problems, and to strengthen the most critical current policies and health protection measures, from the national to the community level. Critical areas that have been identified are human resources within the health sector, and prevention and response to protect health from the effects of natural disasters.
14. African populations suffer disproportionately from both traditional environmental health risks, such as lack of access to water and sanitation, and emerging risks from the unregulated introduction of newer technologies and practices. Many of the most important decisions relating to climate change mitigation and adaptation, such as policies on energy, transport, urban planning and housing, agriculture, water and sanitation, are also important determinants of health.
15. Many of the drivers of both local pollution and greenhouse gas emissions in Africa are outside of national and local control. These include the movement of more polluting technologies from developed to developing countries, and the practices of international businesses in sectors such as logging and mining, which often undermine health and environment protection. Weak national capacity to design and enforce regulations, monitor emissions of greenhouse gases and other pollutants, and lack of intersectoral institutional mechanisms, further contributes to environmental degradation, and leaves populations exposed to the resulting health risks.
16. Both climate protection and health are development concerns, but are rarely integrated to promote sustainable development. For example, air quality guidelines could include greenhouse gas emissions. Improved management of urban development, including management of urban waste, could reduce both local pollution and greenhouse gas emissions, helping to protect and promote human health. Greater linkages between health and environment policy-making, and a focus on clean development, would therefore provide opportunities to improve health at the same time as mitigating and adapting to climate change. This would help to avoid many of the unsustainable and health-damaging development choices that have been made by richer countries.
17. Effective policy development will need to address existing barriers such as low levels of education (as a barrier to behavior change), poverty (for example limiting the ability of African populations to move from polluting biomass to cleaner energy

technologies) and rapid rates of population growth and unplanned urbanization (contributing to greenhouse gas emissions, and poor local environmental health, due to hazards such as air and water pollution).

18. Until now, health messages, and the health sector, have not been strongly represented in climate change negotiations at national, regional or global level. There is therefore a continuing lack of support for projects to protect health from climate change. Projects that have been submitted by African countries for financial support through the United Nations Framework Convention on Climate Change (UNFCCC) National Adaptation Plans of Action, and the Global Environmental Facility, have not been supported. A greater emphasis on the health dimensions of climate change could help to stimulate greater engagement, support and action by both policy-makers and the general public.

19. African populations have contributed very little to global emissions of greenhouse gases, yet are the most vulnerable to the effects of climate variability and change. This is therefore a global challenge, calling for shared responsibility between nations both within and outside the region, to protect the health and well-being of populations within Africa. There is a need for African nations to take responsibility for actively mitigating and adapting to climate change, rather than only responding reactively to the effects. There is also a responsibility for developed countries to provide concrete support for actions, rather than just technical support to assess and monitor the damages caused by climate change.

3. Proposed actions

20. The 2008 World Health Assembly passed a resolution on climate change and health, giving broad direction for the global response to this emerging risk. The following recommendations were elaborated through a regional expert workshop including representatives of health ministries and national meteorological agencies from eight African countries, convened by the WHO Africa Regional Office and the World Meteorological Organization, on 14–16 July 2008, in Dar es Salaam, United Republic of Tanzania, and further developed in a session at the First Interministerial Conference on Health and Environment in Africa, Libreville, Gabon, 26–29 August 2008. The participants recommended efforts to achieve five strategic objectives:

    Objective (1): To increase awareness and place public health concerns and health protection from climate variability and change at the centre of national, regional and international action on climate change.

    This should include the development of coherent, mutually reinforcing messages that are delivered consistently by both the environment and the health sector.

    Objective (2): Development of informed adaptive strategies at all levels which minimize impacts of climate variability and change on population health, integration of these strategies into both health and climate change adaptation plans and programmes, and building capacity and human resources to implement them.

This needs to include strengthening of surveillance to establish the baseline status of climate-sensitive diseases. This should include the development of intersectoral institutional mechanisms and capacities to assess the linkages between climate change and health, to forecast future risks, and to support a greater emphasis on prevention of environmental and health damages, rather than only responding to their effects. This should build on existing capacities, including making use of university skills in research and knowledge management, and reviving intersectoral environment and health monitoring programmes such as the United Nations Global Environment Monitoring System (GEMS) Water Programme. It should particularly emphasize implementation, by reinvigorating programmes to support preventive environmental health interventions, such as the drive for accelerated provision of water and sanitation.

Objective (3): To ensure that health concerns are included in development strategies in other sectors, and that decision-making is adequately supported to protect and promote public health now and in the future.

This should support greater integration of knowledge to understand the linkages between climate change and health. This would include strengthened mutual support for the relevant environmental and health conventions that already exist, such as the UN Framework Conventions on Climate Change, and on ozone depletion. It should also include revision and standardization of relevant environmental regulations, from management of household wastes to air quality, to include a health dimension. This objective should also incorporate valuation of the health implications of decisions related to climate change –which can often contribute a strong argument in favour of improved environmental management and sustainable development choices.

Objective (4): To strengthen the institutional capacity of the health and the environment communities to provide guidance and leadership on health protection from climate change.

This should include documentation of national plans that have been developed to address climate change, environmental and health issues, and opportunities for sharing of experiences between countries, for example in a future Interministerial Conference on Health and Environment.

Objective (5): To ensure access to adequate financial resources to support the necessary actions by the environment and the health community.

This should include strong political support by both environment and health sectors to reiterate support for the G77 position, to rapidly establish a climate-change adaptation fund to fund national adaptation plans of action in developing countries, including interventions to protect health.

4. References

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Annex 1: Agenda and Timetable

Meeting of Government Experts

Monday 25 August 2008:	
0900–1300:	Meeting of the Organizing Committee and the secretariat
1500–1800:	Registration (Cité de le Démocratie)

Tuesday 26 August 2008		
0800–0930	**Registration**	
1000–1100 *Plenary*	***Item 1: Opening of the session*** • Welcoming remarks by the Director, Department of Public Health and Environment, WHO Headquarters • Remarks by the UNEP Regional Director for Africa • Opening statement by the Permanent Secretary, Ministry of Health, Gabon ***Item 2: Organization of the meeting of government experts*** a) Election of officers b) Adoption of the agenda and organization of work	
1100–1200 *Plenary Session 1*	***Item 3: Keynote presentations*** a) Environmental threats to human health: evidence base and health impacts (Dr Maria Neira, Director, Department of Public Health and Environment, WHO Headquarters, Geneva) b) Existing mechanisms and opportunities to address health and environmental challenges (Mr Mounkaila Goumandakoye, Regional Director, UNEP Regional Office for Africa)	
1200–1300 *Parallel Session 1 & 2*	***Item 4 (a)*** Current environmental risks to human health (IMCHE/1/CP1)	***Item 4 (b)*** Climate change (IMCHE/1/CP9)
Break		
1500–1630 *Parallel Session 1 & 2 (Continued)*	***Item 4 (a)*** *Continued* ***Item 4 (c)*** New and emerging environmental threats to human health (IMCHE/1/CP6)	***Item 4 (b)*** *Continued*
1630-1800 *Parallel Session 3 & 4*	***Item 4 (d)*** Contribution of ecosystem services to human health and well-being (IMCHE/1/CP3)	***Item 4 (f)*** Tools and approaches for policy-making in environmental management and public health (IMCHE/1/CP5)

Wednesday 27 August 2008		
1000–1300 *Parallel Session 5 & 6*	***Item 4 (e)*** Economic and development dimensions of environmental risk factors to human health (IMCHE/1/CP2) ***Item 4 (h)*** International legislative and regulatory frameworks (IMCHE/1/CP7)	***Item 4 (g)*** Policy frameworks for addressing health and environmental challenges (IMCHE/1/CP4) ***Item 4 (i)*** Health impact assessments (IMCHE/1/CP8)
Break		
1500-1800 *Plenary 2*	***Item 5*** Consensus on priority actions for governments and partners ***Item 6*** a) Discussion of the draft declaration b) Discussion of the expert's report	
Thursday 28 August 2008		
1000–1230 *Plenary 3*	***Item 6:*** a) Discussion of the draft declaration (continued) b) Discussion of the expert's report (continued) ***Item 7:*** Other matters	
1230–1300	Closure	

Ministerial Meeting

Thursday 28 August 2008	
1500–1600 *Plenary*	***Item 1: Opening of the Ministerial meeting*** • Welcoming remarks by the Minister of Health, Gabon • Statement by the UNEP Regional Director for Africa, • Statement by the WHO Regional Director Opening Address by the Vice-President of the Republic of Gabon
1600–1630 *Plenary*	***Item 2: Organization of the Ministerial meeting*** a) Election of officers b) Adoption of the agenda c) Organization of work
1630–1800 *Plenary*	***Item 3:*** Addresses by partners
Friday 29 August 2008	
1000–1100 *Plenary*	***Item 4:*** a) Report of the chairperson of the meeting of experts b) Consideration of the report of the meeting of experts c) Launch of the Joint WHO-UNEP Health and Environment Linkages Initiative Synthesis Report
1100–1300 *Plenary*	***Item 5:*** Consideration of the draft Declaration
Break	
1500–1800 *Plenary*	***Item 6:*** *Other matters* ***Item 7:*** *Adoption of the Declaration*
	Closure of the session

Side events		
Date	*Title*	*Time*
Tuesday 26 August	Children's health and environment in Africa: Responding to current and emerging threats	*1330–1430*
Wednesday 27 August	The eco-health approach	*1330–1430*
	Media panel	*1800–1900*
Thursday 28 August	International agreements and regulatory frameworks for chemicals and waste	*1330–1430*
Friday 29 August	Launch of the Poverty and Environment Partnership Report	*1330–1430*
Friday 29 August	Press conference	*1800–1900*

Annex 2: Speeches

Speech by Dr Luis Gomes Sambo, WHO Regional Director for Africa at the opening of the First Interministerial Conference on Health and Environment in Africa

Libreville, Gabon, 28 August 2008

Your Excellency, Mr Vice-President representing the President, Head of State of the Republic of Gabon,
Your Excellency Mr Vice-President of the Islamic Federal Republic of Comoros,
Your Excellency Deputy Prime Minister of the Republic of Gabon,
Chairpersons of Constitutional Institutions,
Members of the Government of the Republic of Gabon,
Honourable Ministers in Charge of Health and the Environment of participating countries,
Your Excellencies Ambassadors,
Members of the Diplomatic Corps,
Representatives of International Organizations,
Distinguished Experts and Participants,
Distinguished Guests,
Ladies and Gentlemen,

On behalf of the Director-General of the World Health Organization, Dr Margaret Chan, I have the privilege and honour to address the first Interministerial Conference on Health and Environment in Africa.

I would like, first and foremost, to use this occasion to express my profound gratitude to President Omar Bongo Ondimba and the Government of Gabon for kindly accepting to host and co-organize this historic event with the World Health Organization and the United Nations Environment Programme.

I would like also to express my sincere thankfulness to France, Germany, Rockefeller Foundation and all other partners for the appreciable support they provided to make this event a reality.

May I also thank you all ministers of health and ministers in charge of environment for coming here in Libreville to discuss a subject of such great importance to Africa and to the world at large, and to agree on policies, strategies and actions that would lead to a more dynamic interface between the environment and health, for the benefit of the African populations.

We in WHO are convinced that this Interministerial Conference on Health and Environment in Africa reflects the commitment of Member States to initiate changes both in the development of policy and institutional frameworks and in making investments to reduce risks to health and environment and thereby promote sustainable development.

The need to preserve the environment and promote health has figured among global policy priorities for the past three decades as evidenced by the holding of several summits on this subject. The 1992 Rio de Janeiro Summit initiated the global process to control climate change, protect biodiversity and eliminate hazardous toxic products. It culminated in the adoption of the Rio Declaration which sets the lines of actions for better management of the climate and for taking forward the concept of the environmental rights and accountability of countries. The 2002 World Summit on Sustainable Development held in Johannesburg provided the world an opportunity to take stock of, and complement, the programme launched at the Rio Summit.

Excellencies,
Distinguished Guests,
Ladies and Gentlemen,

We now live in a world of unprecedented awakening of the consciousness of communities and civil society organizations in regard to environmental issues and their linkages to health. Governments must therefore provide adequate response to the health problems caused by environmental risks.

Latest WHO estimates show that nearly a quarter of the global burden of disease is attributable to avoidable environmental factors. That is the sad truth! In addition, the burden of disease attributable to the environment is not evenly distributed around the world. Developing countries, especially those in Africa, are the ones most seriously affected and the vulnerable and poor populations most hard hit.

By talking about the disease burden, I am referring in particular to communicable diseases such as malaria, yellow fever, Rift Valley fever, chikungunya and tuberculosis, to mention but a few.

The persistence of malaria, a disease which is taking a very heavy toll on Africans, is caused largely by poor land use practices, deforestation, mismanagement of water resources and the natural environment of humans, in short irrational land use and territorial planning.

The WHO African Region has been experiencing, in recent years, repeated epidemics of mosquito-borne diseases including yellow fever, Rift Valley fever and chikungunya. In this regard, countries bordering the Indian Ocean have been particularly affected by chikungunya. In continental Africa, Gabon, our host country today, experienced a severe epidemic of this disease with over 13 000 cases in urban areas especially Libreville. With your permission, I would like to digress slightly by disclosing to you that in the course of that chikungunya outbreak, I happened to be on a visit to Gabon. I therefore discussed with the Gabonese authorities the expediency of organizing this conference, here in Libreville, under the high patronage of the Head of State who, in turn, consented, without hesitation, given the relevance of the subject.

I would also like to mention the growing risk of tuberculosis in highly overcrowded areas especially in slums where poverty and disease are inextricably linked.

Excellencies,
Distinguished Guests,
Ladies and Gentlemen,

You are no doubt aware of the day-to-day sanitary conditions prevailing in public markets and in most of the eating places in our countries. The unhygienic conditions, coupled with the frequent lack of running water, have turned those places into hotbeds of microbial proliferation and contamination of foods sold to the large majority of the people. Schools where children spend a substantial part of their time are also in similar situations, with more schools lacking safe drinking water and adequate numbers of clean toilets.

The real challenge we face today is what we must do to remedy such a situation. It is not my intention here to defend the actions of WHO which is, after all, an organization of the Member States. Permit me, however, to mention the solutions that the Regional Office has tried, jointly with some countries, by initiating projects on healthy schools, healthy cities, healthy markets, healthy villages, and so on. Unfortunately, in most cases, the projects remained at the pilot phase. May I use this opportunity to appeal to local councils and communities of Member States to support these projects and replicate them countrywide.

Permit me also to address the issue of the unhygienic conditions prevailing in urban and peri-urban areas. African cities, with a few exceptions, are strewn with heaps of garbage lying uncollected for months or even years, hundreds of thousands of plastic sachets littering the ground, waste waters stagnant in gutters. In general, the coverage of communities with sanitation systems remains very low. This situation can only be addressed through adequate investment in the establishment and rational use of appropriate waste collection and treatment systems for most of our populations.

The use of sources of energy is also another area where health and environment converge. The majority of the world population still use biomass and charcoal for their energy needs, and that contributes to respiratory diseases such as lower respiratory-tract infections, chronic obstructive pulmonary diseases and lung cancers which claim 1.5 million lives globally, every year, with the majority occurring in Africa.

In the African Region, most people dwelling in rural areas or in slums use wood almost exclusively for cooking and heating. Children and the elderly are more vulnerable to the adverse impact of air pollution within households. The use of this low-quality and other similar fuels, coupled with poor ventilation, leads to high levels of indoor pollutants which are aggravating or contributory factors for diseases such as asthma, bronchitis, pneumonia, lung cancer and heart disease.

The use of a large number of second-hand cars and motor cycles that have a high capacity for exhaust gas emission and fail to meet new environmental protection

standards is a major cause of concern considering the high degree of pollution occurring especially in our cities.

Another serious threat to public health is the transport, storage and dumping of toxic wastes. In the last two decades, we have learnt of huge quantities of toxic wastes dumped in Africa, sometimes even on the peripheries of major cities, in total disregard of all ethics. The magnitude of a recent incident prompted WHO to intervene to assess the extent of damage and help take appropriate measures. Such practices should bother the conscience of humankind as a whole. Adequate measures must be taken to protect the health of populations exposed to contamination risks.

The history of public health teaches us that substantial improvements in the supply of safe drinking water, in public hygiene and sanitation, and in access to clean environment, better education and safe and balanced diet and nutrition, among others, will lead to significant reduction of communicable diseases and improve the quality of life.

Excellencies,
Distinguished Guests,
Ladies and Gentlemen,

Climate change, another new challenge, is a very topical issue today. It is neither a mere figment of the imagination nor an abstract subject. In contrast, it is a real issue of concern because we are already experiencing its effects, specifically its adverse impact. Climate variability actually finds expression in occurrences of storms, flooding, drought; with attendant destruction of infrastructures, dysfunction of health services and disorganization of agricultural production. That has led to a significant reduction of the availability and the quality of food commodities. That, in turn, exerts a direct impact on the nutritional status of the population and aggravates morbidity and mortality.

In the light of the numerous challenges, old and new, national health systems must strengthen their capacities and participate actively in assessing new risks and providing response. That would require actions including advocacy, continuing political commitment to sustainable development, continuing assessment of the environmental risks to human health, disease surveillance, institutional and human capacity building, establishment of mechanisms of close collaboration between the health sector and the environment sector, development of integrated policies especially policies focused on actions for ecosystems that are more conducive to human health.

Excellencies,
Distinguished Guests,
Ladies and Gentlemen,

In the past three days, experts have had in-depth discussions on these issues including issues we know since many years and those that we are just beginning to apprehend.

I am pleased to commend the quality of their work and to appreciate their huge contribution to the success of this conference.

That is why I stand deeply convinced, Excellencies, Ladies and Gentlemen, that the Millennium Development Goals represent a shared vision and we should avoid considering them in isolation. They crystallize the main aspects of the intersectoral action of governments and development agencies. They reflect our renewed commitment and guide the effort that we are making to improve the quality of life of the populations. Being even more than a vision, the Millennium Development Goals are a real source of hope. If we in the health and environment sectors work together within a strategic alliance, we can and should make this hope a reality.

Excellencies,
Honourable Ministers,

I have no doubt whatsoever that we will rise to this occasion in the history of public health in Africa. By so doing, we will give hope and a real opportunity for a fresh start especially through the commitments and the actions that we need to set forth in the Libreville Declaration whose adoption will be the climax of this conference.

May I reiterate my gratitude to the ministers of environment for taking this giant and historic step by teaming up with ministers of health to strengthen further the collaboration between the health sector and the environment sector.

May I also commend and thank the people and the Government of Gabon for the welcome and the kind hospitality that we have enjoyed during our stay in Libreville.

May you permit me to express our deep acknowledgements to the authorities of the Republic of Gabon especially the Deputy Prime Minister, the Minister of Environment, Sustainable Development and Nature Protection, and the Minister of Health and Public Hygiene, responsible for family affairs and women's promotion, for all their efforts to make this historical event a success.

Last but not least, I would like to commend the exceptional quality of the cooperation between WHO and the Republic of Gabon, whose most recent fruits are the holding of the Regional Conference on avian influenza and the diverse forms of support for the establishment in Libreville of the WHO Intercountry Support Team for Central Africa.

Excellencies,
Ladies and Gentlemen,

Now let the strategic alliance between health and environment begin!

I thank you.

Speech by Mounkaila Goumandakoye, Regional Director, UNEP at the First Interministerial Conference on Health and Environment in Africa

Meeting of government experts

Libreville, Gabon, Tuesday 26 August, 2008

Distinguished Experts from the Health and Environment Sectors in Africa,
Dear Colleagues,
Ladies and Gentlemen,

I am honored to be with you today, as we gather here in Libreville for this landmark conference. Allow me to start by expressing our sincere gratitude to the Government of Gabon who has kindly offered to host this conference and has provided its full support to make this event a success. Thank you for the warm welcome.

As a UNEP representative speaking at this conference, it is gratifying to witness, at the outset, the enthusiasm and commitment by countries, WHO and my UNEP colleagues to work together for integrated policies and actions in health and environment for the well-being of Africans.

This conference comes at a very appropriate time as the challenges we face have never been that critical and in need of urgent action if we are to achieve sustainable development in our continent.

Over the past 30 years, the environment in Africa has continued to deteriorate, resulting in environmental change which is making more and more people in the region vulnerable due to increased risk and inadequate coping capability. Poor environmental conditions are contributing to a large proportion to the global burden of disease.

Poverty eradication, changing consumption and production patterns, and protecting and managing the natural resource base for economic and social development are overarching objectives and essential requirements for sustainable development and yet: loss of biodiversity continues; fish stocks continue to be depleted; land degradation and desertification claim more and more fertile land; access to safe water and sanitation is still a life-threatening challenge; the adverse effects of climate change are already evident; natural disasters are more frequent and more devastating and developing countries more vulnerable; and air, water and marine pollution continue to rob millions of a decent life.

Droughts and famine are ever present, and tens of millions of Africans have suffered the consequences every season. Droughts are a direct cause of food insecurity, triggering migration in some cases, but they also have negative impacts on economic performance.

The heart of Africa is the "lightning centre" of the world and where most of Africa's wildfires occur, making Africa the planet's "burn centre" as well. Fires contribute as much as 35% to ground level ozone formation in Africa, bringing negative health consequences such as respiratory illnesses.

It is estimated that over 300 million people in Africa face water scarcity. By 2050, it is projected that areas experiencing water shortages in sub-Saharan Africa will have increased by 29%.

Between 1990 and 2004, over 30 African countries improved their population's access to safe water and sanitation, and 23 countries reduced the percentage of people living in slums but still, in many sub-Saharan African cities, children living in slums are more likely to die from water-borne and respiratory illnesses than are rural children.

Climate change is emerging as a driving force behind many of these problems and is likely to intensify the already dramatic transformations taking place across the continent. Although Africa produces only 4% of the world's total carbon dioxide emissions, its inhabitants are poised to suffer disproportionately from the consequences of global climate change.

Globalization has added a new dimension to these challenges. The rapid integration of markets, mobility of capital and significant increases in investment flows around the world have opened new challenges and opportunities for the pursuit of sustainable development. But the benefits and costs of globalization are unevenly distributed, with developing countries facing special difficulties in meeting this challenge.

Increasing human vulnerability due to environmental change is a threat to sustainable social, economic and environmental development. Governments and institutions in Africa have adopted various measures in the past 30 years to deal with issues, which contribute to environmental change. These have ranged from political and social measures to economic and environmental measures.

Distinguished Experts,
Dear Colleagues,
Ladies and Gentlemen,

Many factors impact exposure to risk and coping capabilities, and they have social, economic and environmental dimensions. Poor economic performance, and weak institutional and legal frameworks, as well as overexploitation and other processes, contribute to increased human vulnerability. With models suggesting that human vulnerability is set to get worse in the future, Africa has to adopt strategic measures to mitigate such vulnerability and to improve human security.

So the question is how do we respond to these challenges? Some of the threats can be addressed by the health or environment sectors acting alone, but many cannot. The complex and interlinked range of hazards and risks requires the development of integrated policies that address health, environment and development goals coherently.

Policy-makers cannot afford to ignore the need to improve environmental management if the human vulnerability/environmental change circle is to be broken. Sustainable development means taking into account social, economic and environmental issues at the same time, not one at a time.

Demonstrating such linkages between more integrated approaches require simultaneous action on multiple fronts including:

- *a renewed moral commitment to sustainable development;*
- *political partnerships emphasizing proactive approaches to decision- making;*

- *technical solutions addressing root drivers of environmental degradation and resulting health risks upstream in the development process.*

This conference is expected to explore the evidence base for the bidirectional links between health and environment. It intends to build a strategic health and environment alliance that will influence development policies at the macroeconomic and sectoral levels, impact on existing investment frameworks and resource allocation criteria and procedures, and lead to tangible outcomes in the short to medium terms.

We hope that, as partners involved in the process, we will all share the same conviction that it is only by addressing health and environment issues together that the real value of each can be appreciated fully, and incorporated into development agendas for enhanced human well-being.

Let us all hope that the people of Africa will look back at our generation and say that we saw the challenge, that we answered the call and that we didn't flinch in the face of our responsibility to build a better Africa, a better world.

Thank you for your attention.

Speech by His Excellency El Hadj Omar Bongo Ondimba, President of the Republic of Gabon and Head of State at the opening of the First Interministerial Conference on Health and Environment in Africa

Libreville, Gabon, 26–29 August, 2008

Your Excellency Mr Vice-President of Comoros,
Madam the Vice-Premier and Minister in charge of the Environment,
Honourable Ministers,
WHO Regional Director for Africa,
UNEP Regional Director for Africa,
Your Excellencies representing the Diplomatic Corps and International Institutions,
Distinguished Delegates,
Distinguished Guests,
Ladies and Gentlemen,

His Excellency El Hadj Omar Bongo Ondimba, President of the Republic of Gabon, Head of State, who has been unable to attend this gathering, has done me the honour of representing him at the opening of this meeting and to deliver the following message on his behalf.

And I quote:

"On behalf of the people of Gabon and on my personal behalf, I am particularly pleased to welcome, to the Republic of Gabon, ministers and top-ranking officials of African countries, and high-ranking personalities from other friendly countries.

I would like to use the present occasion to express to all of you our great delight in hosting, in Libreville, the First Interministerial Conference on Health and Environment in Africa.

We are thankful to the WHO Regional Director for Africa, Dr Luis Gomes Sambo, for the choice of Libreville, capital of Gabon, to host this important African gathering.

We also thank, warmly, the Regional Office of the United Nations Environment Programme for all its work in partnership with the Government of Gabon in organizing this African forum on health and environment.

Distinguished Guests,
Ladies and Gentlemen,

As is the case of all other regions worldwide, the development of African countries calls for rational management, by everyone, of the national environment.

The truth is that development will always have an impact likely to present some health hazards for the populations.

For so long, lack of accurate data and correlative studies hampered prompt awareness or even timely understanding of the impacts of various development interventions.

The environment has therefore suffered varying degrees of damage at the national, regional and global levels, resulting in varying levels of impact on the health of humans.

At the 1972 Stockholm Conference, the 1992 Rio de Janeiro Earth Summit, and the 2002 Johannesburg Conference, among others, the continuing global degradation of the quality of the environment was highlighted by many international experts, signalling a serious threat looming on the very survival of humankind as a whole. When faced with this threat which causes worries, the international community resolved to wage a resolute battle to reverse the trend.

Mindful of the threats to health due to industrialization and accelerated urbanization with major concentration of populations, the leaders of African countries acceded to various international conventions and treaties and most of them embarked upon incorporating them in national regulations so that they can be effectively implemented.

We, African leaders, went even further to define regional frameworks for environmental protection and preservation in the context of the African Ministerial Conference on Environment and the NEPAD environmental strategies.

All these actions reflect the will of the high authorities of African countries to commit their respective governments and peoples to the major drive to protect the environment and promote health.

Distinguished Guests,
Ladies and Gentlemen,

In this era of globalization, never before has Africa's development been confronted with such diverse bottlenecks.

We would have to respond, in unity and in concert, by courageously adopting decisions that safeguard our national and regional interests. For my part, in order to honour the commitments that Gabon has made at the regional and global levels, I have, among other measures, devoted 11% of our national territory to the cause of humankind by creating 14 protected national parks.

We, in African countries, should continue and even intensify our ongoing efforts so that, together, we can carry out promising and effective large-scale action to preserve and improve the quality of the environment at both national and regional levels.

That will require a commitment on our part to devote the necessary resources and energies to ensuring convergence of national policies in order to consolidate a common platform of agendas for action in the areas of health and environment.

In addition, that will necessarily require a strategic alliance with development partners to support Africa throughout the process.

That is why I am so pleased to commend the holding of this conference which, while seeking to create a better understanding of the correlations between health and environment, is taking place at a very appropriate time and will:

- *bring about a commitment to integrate national policies on health and environment;*
- *bring comfort to African countries in their search for African solutions to the problem of health and environment;*
- *provide an opportunity to translate into deeds the common will to unite our forces in ensuring a realistic and sustainable management of the environment.*

Honourable Ministers,
Ladies and Gentlemen,

It is my wish that at the end of this First Conference in Libreville, we will be proposing to our countries truly African solutions that will help improve the management of our environment while minimizing the risks to health.

I trust that you have the capacity and the competence to rise to the occasion.

I wish you full success in your deliberation and declare open the First Interministerial Conference on Health and Environment in Africa".

Unquote!

I thank you.

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The environment is one of the primary determinants of individual and community health, and exposure to physical, chemical and biological risk factors in the environment can harm human health in various ways. Africa continues to face the "traditional" challenges of poor access to safe drinking water, hygiene and sanitation; absent or poorly designed irrigation and water management systems; and inadequate and poorly constructed road infrastructure, housing and waste management systems.

From 26-29 August, the first Inter-Ministerial Conference on Health and Environment in Africa was hosted by the Government of Gabon, with the World Health Organization (WHO) and the United Nations Environment Programme (UNEP) as co-organizers.

This landmark conference explored ways to address health and environment priorities and linkages and to enhance the political commitment required to reduce environmental threats to health. The outcome of the conference was formalized in the adoption of the "Libreville Declaration."

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