`

Situational Analysis and Needs Assessment for Ethiopia

AIR POLLUTION, OCCUPATIONAL HEALTH AND SAFETY, AND CLIMATE CHANGE

FINDINGS, RESEARCH NEEDS AND POLICY IMPLICATIONS

Establishing a GEOHealth Hub for East Africa

School of Public Health, Addis Ababa University, Ethiopia

&

University of Southern California, USA

August 2014

Editors

Abera Kumie, Jonathan Samet and Kiros Berhane

Abera Kumie, MD, MSc, PhD
Associate Professor of Public and Environmental Health
School of Public Health,
College of Health Sciences,
Addis Ababa University, Addis Ababa, Ethiopia
Email: aberakumie2@yahoo.com

Jonathan Samet, MD, MS
Distinguished Professor and Flora L. Thornton Chair,
Department of Preventive Medicine,
Keck School of Medicine,
Director, Institute for Global Health
University of Southern California, Los Angeles, CA, USA
Email: “Samet Jonathan” <jsamet@usc.edu>

Kiros Berhane, MSc, PhD
Professor, Division of Biostatistics
Director, Graduate Programs in Biostatistics and Epidemiology,
Department of Preventive Medicine,
Keck School of Medicine,
University of Southern California, Los Angeles, CA, USA
Email: “KirosBerhane” <kiros@usc.edu>

`

Acknowledgements

The School of Public Health at Addis Ababa University, Ethiopia, and the University of Southern California, USA, extend sincere thanks to the National Institutes of Health, USA, for making this project possible by providing financial support under the Global Environmental and Occupational Health (GEOHealth) Hub program (1R24TW009548-01).Several stakeholders, including the Federal Ministry of Health, the Federal Ministry of Labor and Social Affairs, and the Federal Environmental Protection Authority of Ethiopia, are also acknowledged for their support during data collection, without which the product of this assessment could not have been possible. All participants of this SANA assessment are gratefully acknowledged for their involvement in data collection, synthesis, and write-up of the report.

Abera Kumie, Jonathan Samet and Kiros Berhane

Background

The Addis Ababa University School of Public Health, Ethiopia, and the University of Southern California, USA were awarded paired planning grants toward the establishment of a Global Environmental and Occupational Health (GEOHealth) Hub. A key objective of the planning process was to conduct a Situational Analysis and Needs Assessment (SANA). This working document addresses limited information in three key areas: air pollution, occupational health and safety, and climate change, as well as the policy and organizational frameworks across these key thematic areas in the Ethiopian context.

The SANA process engaged national stakeholders at various stages including an initial project launch meeting, project inception meeting, and national workshop for the purpose of getting inputs and priority issues in four thematic areas. Four technical expert teams were organized with members from the Addis Ababa University School of Public Health and University of Southern California. An implementation guide was prepared after repeated consultative meetings. The guide explicitly indicated the purpose of the GEOHealth Hub planning project, deliverables, operational definitions, and the tools of primary and secondary data collection. The final SANA report was disseminated at a national workshop organized in Addis Ababa on July 25, 2014 in the presence of key national and regional stakeholders including those from the Ministry of Health, Ministry of Labour and Social Affairs, Ministry of Environmental Protection and Forestry, National Meteorological Agency, Ministry of Agriculture, Five Federal Universities, and others. The workshop included presentation of key findings as well as critique of the findings by national experts on the respective themes. The SANA report was then revised based on the feedback from national experts and key stakeholders.

The working document contains 4 sections co-authored by highly experienced experts in the respective fields. Each section is independently organized and presented in this report.

This assessment is expected to identify national priority areas for research in support of evidence-based problem-solving, management, and associated capacity building. It also provides an assessment of key stakeholders and the policy frameworks in place for addressing environmental and occupational health problems. The lessons and experiences gained from this assessment is being used to conduct similarly designed SANAs in each of the three other East African countries (Kenya, Uganda, Rwanda).

EXECUTIVE SUMMARY

Introduction

The burden of disease due to environmental and occupational health hazards and effects of global climate change are of growing concern in Ethiopia, a country already facing the ongoing challenges of malnutrition, poverty, poor maternal/child health, and infectious diseases. These challenges are also shared by other countries in East Africa. To tackle these complex and multi-faceted challenges, the School of Public Health (SPH) of Addis Ababa University (AAU) in Ethiopia and the Department of Preventive Medicine and the Institute for Global Health, University of Southern California (USC) in the US, in partnership with regional partners from Kenya, Rwanda and Burundi, are currently undertaking a two-year planning project (September 2012 – August 2014) entitled "Establishing a GEOHealth Hub for East Africa". The hub focuses on three main areas; namely, air pollution and health, occupational health and safety, and climate change and health. The project has the long-term goal of establishing a regional hub for training, research, and policy support.

As part of this planning process, a country-wide situational analysis and needs assessment (SANA) on the health impacts of environmental exposures, occupational safety and health (OSH), and climate change has been conducted for Ethiopia to assess the existing country profile and to identify the most critical gaps in these areas. The output of this assessment is expected to identify national priority areas for research in support of evidence-based problem-solving, management, and associated capacity building. It also provides an assessment of key stakeholders and the policy frameworks in place for addressing environmental and occupational health problems. The lessons and experiences gained from this assessment will be used to conduct similarly designed SANAs in each of the other three East African countries (Kenya, Uganda, Rwanda), eventually leading to the establishment of a regional GEOHealth Hub. The SANA was organized around four themes: (i) air pollution and health, (ii) occupational safety and health, (iii) climate change and health, and (iv) policy, regulatory, and organizational frameworks.

Purpose

The main purpose of the SANA was to

1. Assess the existing country situational profile on air pollution, occupational safety and health, climate change and health, and the policy-regulatory framework with regard to managing the environment;
2. Identify gaps and needs related to tracking data, research evidence, and capacity, based on the situational analysis;
3. Determine possible interventions to remedy the identified needs.

The SANA used secondary data from published articles and relevant reports. Journal articles, thesis reports from academia, government and national statistical reports were the main sources of information.

A structured data collection guideline, in line with the goals of the assessment and the overall purpose of the GEOHealth hub, was first developed taking into consideration the current practices in environmental and occupational health in Ethiopia. The content of the literature search for the four key themes was identified and approved for subsequent data gathering and review. Data collectors who are currently engaged in practices relevant to the GEOHealth Hub were carefully recruited, oriented, and involved in data collection and synthesis until the SANA draft report write-up process was completed. The progress of data collection and its management were monitored weekly through meetings of the technical teams from January through March 2013.

Two approaches were followed in gathering data for the needs assessment. One approach identified possible gaps based on the synthesis of the findings from the situational analysis. The second approach used collection of primary information from stakeholders with semi-structured discussion guidelines. The major stakeholders for GEOHealth -- primarily, the Ministry of Health, the Ministry of Labor and Social Affairs, and the Environmental Protection Authority -- had significant roles as sources and facilitators of data collection. The collected data were categorized into the four themes and synthesized for the write-up using a descriptive approach as described below.

Air pollution and Health

This theme distinguished between two types of air pollution: ambient or outdoor air pollution, which is caused mainly by industries and vehicles; and indoor air pollution from biomass fuel used in households. The relative contribution of indoor air pollution seemed to be greater compared to that of outdoor air pollution, although the latter is on the rise, reflecting the growing intensity of industrialization and urbanization. Biomass fuels emit harmful gases, vapors, and smoke that are known to affect the respiratory organs and cause acute and chronic respiratory diseases including cancer.

The levels and health effects of both indoor and outdoor air pollution have-not been comprehensively studied in Ethiopia. Results are available from a few small studies that used NO_2, CO, and particulate matter to evaluate levels of indoor air pollution in households and refugee camps. These studies are geographically limited to Addis Ababa, Tigray, Oromia, and the Southern regions. These limited studies have found that the levels of indoor air pollution exceeded limits that have been recommended by regulatory agencies such as the USEPA and by the WHO guidelines. However, such limited studies do not appear to have either adequate spatial coverage or enough temporal resolution to fully characterize the actual burden of air pollution on human health and its potential impact on the ecosystem in the country.

The assessment found monitoring and management of air pollution to be critical areas of concern. There exists a conducive policy structure for management and control of air pollution as mandated to the Ethiopian Environmental Protection Authority (EPA). EPA has proclamations and regulations dealing with the management of air pollution, but the capacity to evaluate and monitor the levels of urban air pollution has not resulted as yet in tangible accomplishments. Limited resources as well as limits in technical and training capacity appear to be major bottlenecks to the progress of air pollution management.

The problem of air pollution due to vehicular movement is likely to be a major concern, especially in large urban centers such as Addis Ababa. Although the level of traffic air pollution has not been extensively evaluated, the growing on-road vehicular density and the limited road infrastructure are likely indicators of potential health hazards.

In general, there is currently inadequate information on levels of air pollution in Ethiopia. Improving the national capacity to conduct effective monitoring and evaluation of indoor and outdoor air pollution and to assess the health effects of air pollution, through well-planned and targeted research and training in these domains, would be timely and is highly recommended.

Occupational Safety and Health

This theme focused on exploring the level of industrialization in the country and its impaction the health and safety of the workforce, in addition to the health effects of agricultural exposure. Ethiopia is a primarily agrarian country with only about 5%of the total employed workforce engaged in the manufacturing, construction, and mining sectors. Males predominate as workers in all sectors. The occupational hazards in the work place depend on the nature of the industry and the production process. Generally, chief safety issues include accidents that result in injuries, and a wide variety of health hazards of major concern involving chemicals and physical agents. Workplace hazards are closely linked with the growth of industries and increasing urbanization that have led to a rapid expansion of the construction industry.

The organization and availability of health services in work places varies widely depending on the scale of the enterprises. Stand-alone health facilities and contract-based public health services are the two modes of provision. In most of the cases, the provisions of health services do not appear to have a strong link with the monitoring and prevention of hazards.

The current labor proclamation is the basis for all activities and practices on the delivery of OSH services. An operational guideline (OSH directive) outlines detailed procedures, and provides standards or cut-offs for hazard prevention. There is a concern that the existing regulatory documents do not address emerging issues related to new and booming industries due to the recent economic development, such as those in the construction industry and floriculture. It is worth noting, however, that a national OSH policy envisaging new economic developments has been submitted to the Council of Ministers for consideration and approval.

The theoretical concept of hazard management through its avoidance, reduction, or isolation may be currently ineffective in Ethiopia due to such factors as the widespread use of obsolete machines, poor accountability by employers, poor knowledge of and awareness by workers of work-place risks, and limited training on safety issues. Risk management at the person level through the provision of personal protective devices is a common practice, but of little efficacy. Hazard signs are not properly identified by employees because of limited training.

There is severe shortage of properly trained OSH inspectors in Ethiopia. Close to 95% of all available OSH inspectors are found in four regions (Addis Ababa Tigray, Oromia,and Amhara). Many of the OSH inspectors lack basic professional training. The Addis Ababa Bureau of Occupational Safety and Health is a pioneer, by Ethiopian standards, in the organization and use of OSH instrumentation for monitoring known occupational hazards. Even this Bureau, however, is in dire need of assistance and further development with regard to basic professional training on the handling of existing monitoring instruments and enhancing the quality of monitoring instrumentation.

There are only handful studies for Ethiopia that assessed the type and magnitude of relevant health outcomes and respective occupational risk factors. Exposure measurements in the work place were only available in some studies and these focused on cotton dust, noise, and cement dust. Work place exposure was characterized subjectively in many studies through the use of operational definitions in the research questions. The few available studies appear to be neither comprehensive nor nationally representative.

The current organization of hazard surveillance and monitoring of accident/ injury does not appear to be systematic. A shortage of monitoring instruments and the poor quality of the existing instruments are major constraints. Lack of basic training on the operation of the instruments is a challenge in M & E activities. Capacity-building efforts in areas of research, training, policy development, regulation, and organization are greatly needed.

Climate Change and Health

Climate change currently represents one of the greatest development and health challenges in Ethiopia. The current stage of research on climate change and health in Ethiopia is rudimentary: research findings and other activities tend to appear largely fragmented and uncoordinated. As a result, there are only few spatially detailed, methodologically consistent climate impact studies available for review.

Climate change is of critical importance to Ethiopia, which has been identified as one of the world's most vulnerable countries with regard to the impact of the adverse effects of climate change. Human-induced climate change is expected to bring further warming over the next century at unprecedented rates. Climate models suggest that Ethiopia will see further warming in all seasons between 0.7°C and 2.3°C by the 2020s and between 1.4°C and 2.9°C by the 2050s.

Some impacts of climate change occur as a result of anomalies in temperature and rainfall that have been demonstrated through the analysis of climate data for 1961-1990. Ethiopia has experienced repeated droughts, floods, agricultural failings with malnutrition, extreme temperature events (extreme heat and cold), and re-emergence of climate-sensitive diseases. Increased environmental survival of pathogens and creation of new ecological niches for vectors to propagate diseases are also observed. The major health effects include under-nutrition due to variability in agricultural production and food security; increasing incidence of climate-sensitive diseases such as malaria, meningitis, and diarrhea; and other adverse health impacts due to scarcity of water and natural disasters such as floods and droughts. Malaria in the highlands is likely to occur in the very near future, while soil-transmitted helminthic infections such as hookworm may increase because of warming. Diarrhea is expected to be a frequent health risk due to the rainfall and flooding that contaminates drinking water. Zoonotic infections will emerge because of the changes in parasites or pathogens to host relationships favored by climate change. Malnutrition -- not only among children under five, but even among adult population -- will be a significant concern because of food shortages posed by the anomalies of climate change. While the impact of climate change on health and other related issues is recognized by various governmental stakeholders, the specific actions and responses have had very little oversight to date.

This assessment identified the lack of sufficient collaboration among organizations on the planning and execution of climate change and health activities, and the lack of trained professionals who can independently perform climate change and health-related research and activities at various levels. The SANA also revealed lack of a well-organized structure in the various organizations and poor inter-sectoral collaboration; poor coordination and communication among different stakeholders; lack of policies and programs among those who independently target climate change and health; inability of the existing policies to consider the gender- and community-related dimensions of climate change; and weak monitoring and evaluation efforts on climate change and health activities at the various organizations.

Policy, Regulatory and Organizational Framework

This theme addressed the foundation of policy and organizational contexts that play roles in the management and control of health impacts of air pollution exposure, occupational safety, and climate change.

Results of the SANA showed that there are a number of major constraints in addressing the public health challenges arising from air pollution exposure, occupational safety, and climate change.

While many policies and regulatory provisions are already in place, in the majority of cases a lack of persistence is evident in implementing the policies/strategies and enforcing the regulatory provisions.

The results of the situational analysis indicated that there are cross-cutting gaps in the different sectors. Among these, the shortage of skilled personnel is an urgent priority. Most of the stakeholders appear to be suffering from an acute shortage of professionals and poor retention mechanisms.

Research activities in the health impacts of air pollution exposure, occupational safety, and climate change currently appear to be at the minimal level. Consequently, evidence-based decision making and monitoring and evaluation are hampered.

The findings from the SANA on all of the three themes discussed above are characterized by the complexity of the challenges and by their multi-sectoral nature. However, mechanisms for coordination and integration are mostly on paper and not practically functional. Lack of such mechanisms reduces the engagement of the different stakeholders mandated by the government.

The linkage between universities and concerned ministries indicates a mismatch between what the training institutions are producing and the specific skills required by the ministries. It also shows that the level of awareness of the challenges posed by environmental, occupational, and climate change related issues is currently quite low. Furthermore, the outcomes of the minimal monitoring and evaluation activities in progress are compounded by poor documentation. The need to build training and research capacity, develop clear implementation guidelines, and build effective inter-ministerial coordination mechanisms should be highlighted as some of the most important findings from this assessment. The development of a full GeoHealth Hub would be of great benefit to Ethiopia.