



## **Concept Note and Conference Announcement**

### **SCIENTIFIC REVIVAL DAY OF AFRICA CELEBRATIONS 2024**

**CONFERENCE THEME: ENVIRONMENT, HEALTH AND CLIMATE CHANGE**

**DATE:** SEPTEMBER 11-12, 2024  
**VENUE:** NAIROBI SAFARI CLUB

### **CONCEPT NOTE**

#### **1. Introduction**

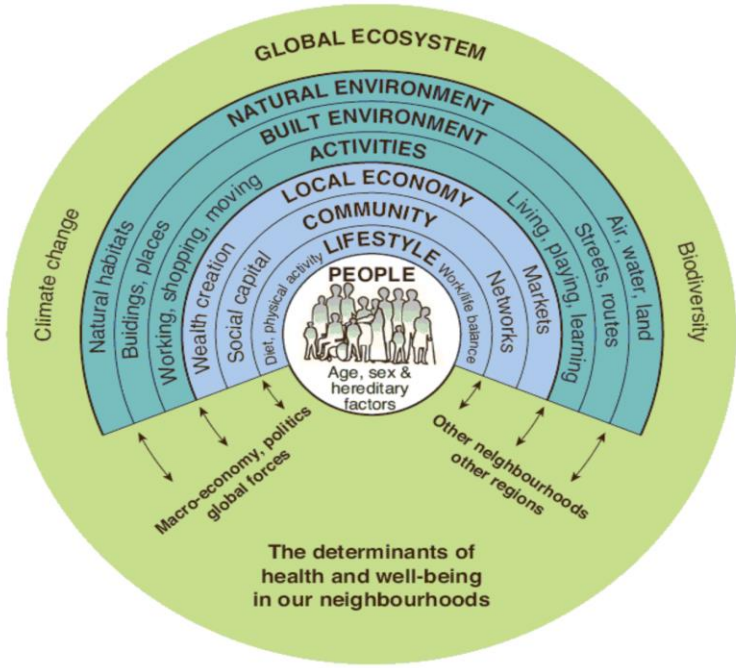
In support of enhancing ‘Science, Technology and Innovation’ the African Union (AU), formerly the Organization of African Unity (OAU) on 30<sup>th</sup> June 1987 during the 46<sup>th</sup> Ministerial Conference in Addis Ababa declared 30<sup>th</sup> June as a special day to commemorate science and technology in the continent. This day is dedicated to issues of science, technology and innovation (ST&I) for African countries to take stock of the contribution of ST&I to socio-economic development in Africa. The Kenya National Academy of Sciences (KNAS) decided to link some of its activities with this effort and consequently started celebrating the ‘Scientific Revival Day of Africa (SRDA) annually in 2004. The Academy has in the previous celebrations addressed ten (10) themes focusing on science and technology with the last conference in 2023 focusing on language and national development. However, due to ‘Coronavirus (COVID 19)’ outbreak and restrictions, there were no celebrations between 2020 and 2022. This year’s celebration will focus on ‘Environment, Health and Climate Change’.

#### **2. Environment, Health and Climate Change**

The environment can directly and indirectly impact our health and well-being of the society. ‘Environment’ broadly includes everything external to us, including the physical, natural, social and behavioural environments, while ‘Health’ is a state of complete physical, mental and social well-being. Health is not merely the absence of disease or illness. On the other hand, climate change refers to long-term shifts in temperature and weather patterns. These shifts may be natural, but human activities have been the main driver of climate change due

to the burning of fossil fuels which produce heat-trapping gasses. Climate change is the single biggest health threat facing humanity. Climate change is accelerated and exacerbated by unsustainable human activities, systems and practices such as dependence on non-renewable energy resources, transport; commercial and industrial sectors and deforestation, which practices either directly or indirectly affect human health. Climate impacts are already harming health, through air pollution, diseases, extreme weather events, mental health, increased hunger and poor nutrition. The health effects of climate change include respiratory and heart diseases, pest-related diseases, water and food-related diseases, injuries and deaths.

The environment is important for health because we need safe, healthy and supportive environments for good health. The environment in which we live is a major determinant of our health and well-being. This is because we depend on the environment for energy and the materials needed to sustain life, such as clean air, safe drinking water, nutritious food and safe places to live. Many aspects of our environment – both the built and natural environment–can impact our health. For instance, Kenyans are exposed to harmful substances whose cost of treatment has taken a heavy toll on meagre public resources. It is important that health issues are interpreted in the wider context of the environment and where one lives as shown in Figure 1.



**Figure 1: Determinants of health and well-being in our neighbourhoods**

Environmental degradation can have a significant impact on human health. Estimates of the share of environment related human health loss are as high as 5% for high-income Organisation for Economic Cooperation and Development (OECD) countries, 8% for middle-income OECD countries and 13% for non-OECD countries. Air pollution and exposure to hazardous chemicals are important causes of the environment-related burden of disease in OECD countries. The transport and energy sectors are major contributors to air pollution, while important sources of chemical pollution are agriculture, industry, waste disposal and incineration. Opportunities for reducing environment-related health risks are considerable. The benefits of many environmental policies regarding reduced healthcare costs and increased productivity significantly exceed the costs of implementing these policies.

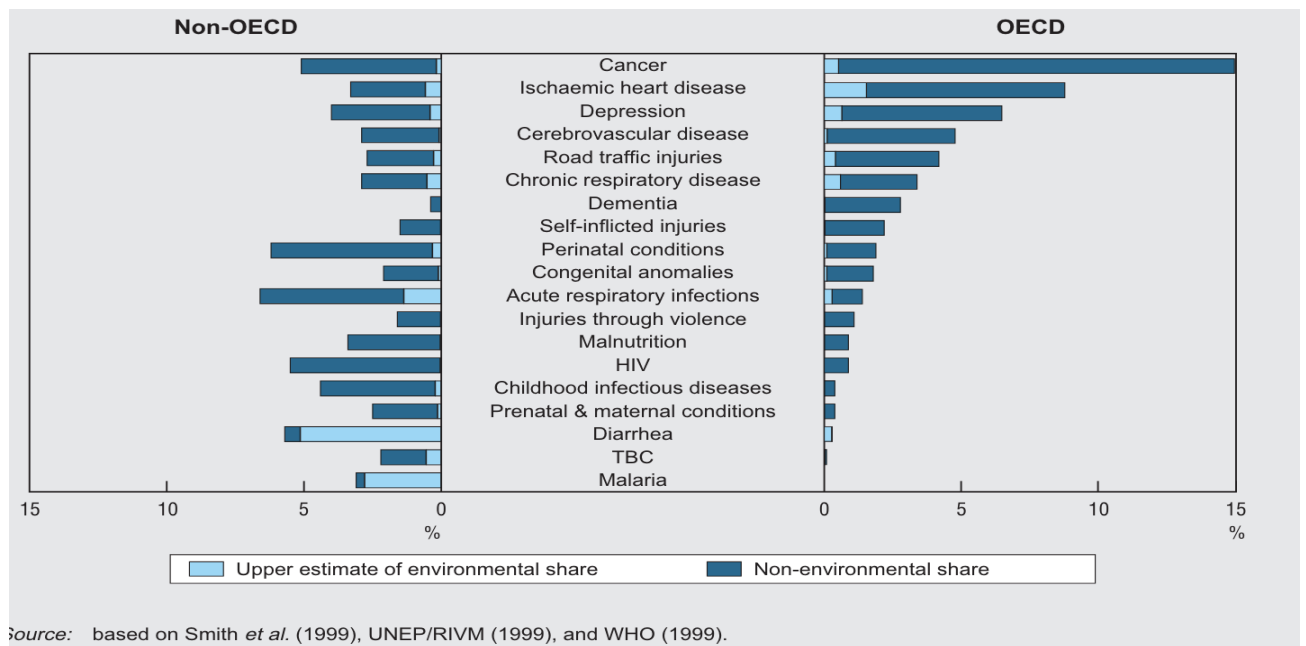
Health concerns have traditionally underlain much of the political priority given to environmental issues in OECD countries. The impact of environmental risk factors on health is extremely varied and complex in both severity and clinical significance. For example, the effects of environmental degradation on human health can range from death caused by cancer due to air pollution to psychological problems resulting from noise. Also, traces of pesticides are often found in the breasts of lactating mothers. There are other cases of industrial effluents in water, fish etc, thus polluting food systems. A better understanding of the economic costs of environment-related health loss can help to inform environmental policy design.

### **3. Conference Sub-Themes**

#### **(i) Environmental Degradation, Toxicology and Human Health**

Many factors influence the health of a population, including diet, sanitation, socio-economic status, literacy, and lifestyle. These factors have changed significantly during the economic transitions that have shaped present society and resulted in a considerable increase of life expectancy in OECD regions (Ruwaard and Kramers, 1998). Recent studies show that the major determinants affecting life expectancy in OECD regions from 1970 to 1992 were better working conditions, and increased GDP and health expenditure per capita. However, they also indicate that during the same period the negative impacts of air pollution on human health increased in OECD countries (Or, 2000). In order to provide a complete picture of a population's health status, the various aspects which affect it can be combined in a measurement of the "burden of disease", as expressed for example in "disability adjusted life

years” (DALYs) as shown in Fig. 2. They give an indication of how the duration of disease combined with the impact of disease can alter the ability of people to live normal lives as compared to those with no disease (Murray and Lopez, 1996).



**Fig. 2. Patterns of disease burden with estimated environmental shares in the mid-1990s**

### (ii) Economic Implications of Environmental Health

The impacts on human health from degradation of the environment affect society not only in terms of loss of quality of life, but also in terms of expenditure on health care, loss of productivity and loss of income. Since these impacts vary, different approaches are required for estimating their magnitude. Direct expenditure on health care for environment-related diseases can be estimated using the environment-related shares of the burden of disease and data on health care expenditures in OECD countries (OECD, 1999) as shown in Table 1. These estimates are fairly rough but are useful as proxy indicators for current environment-related expenditure on health care and the possible savings that may result from environmental policy interventions. These indicators can therefore be helpful in estimating the economic benefits of environmental policy options.

Burden of disease	134 DALYs / 1 000 capita
Environment-related fraction (lower and upper estimate)	2.3%-5.8%
GDP	US\$22 467 billion (PPP)
Total expenditure on health	9.9% of GDP
Environment-related health costs	US\$50-130 billion
<i>Sources:</i> OECD (1999a), and Melse and de Hollander (2001).	

**Table 1: Total health expenditure in OECD countries and the environment-related share**

### (iii) Policies and Interventions

The loss of health due to environmental degradation is substantial and calls for policy interventions. These environmental policy interventions can in turn save money in health care costs. The upper estimate of the current environment-related share of the burden of disease is 6% for OECD countries combined and 13% for non-OECD countries (Table 2). The cost-benefit ratio for any given policy intervention will depend on the state of the environment and the pattern of disease of the affected population. Since these factors can differ between OECD countries and even within countries, there are only a few recommendations that can be generally applied. However, certain priority issues for intervention common to almost all OECD countries can be identified.

**Table 2: Priority, environment-related diseases, issues and sectors in OECD countries**

	High-income OECD countries	Middle-income OECD countries
Diseases	Cardiopulmonary diseases Cancer Depression	Communicable diseases Cardiopulmonary diseases Cancer
Issues	Air pollution Chemicals Noise/liveability	Sanitation/food/housing Air pollution Chemicals
Sectors	Transport Industry/agriculture Housing	Public hygiene Transport/energy Industry/agriculture
<i>Source:</i> Melse and de Hollander (2001).		

#### **4. The Conference and Participants**

The Scientific Revival Day of Africa (SRDA) celebrations in 2024 will be hosted by the Kenya National Academy of Sciences (KNAS) and Ministry of Education on September 11-12, 2024 in Nairobi, Kenya. The celebrations will bring together participants from the universities, government regulatory agencies and departments, research institutes, and non-governmental organizations, among others. The conference is expected to bring out the scientific evidence needed to inform policy formulation or implementation on matters of environment, health and climate change. While the interactions of climate change, environmental and health are complex, there is need for sharing experiences on sustainable initiatives to better track environmental and health losses and damages, and to support early warnings and preparedness both within and between countries and among the most vulnerable communities. Benchmarking with best practices from across the world would help enrich the interventions that the Kenyan Government may institute going forward. The conference is expected to yield the following deliverables:

- (i) Conference report
- (ii) Policy brief /position paper

#### **5. Date and Venue**

The Conference event on Climate Change, Environment and Health will be a *two-days meeting* to be scheduled on *September 11-12, 2024*, at the Nairobi Safari Club (Lilian Towers) located along University Way in Nairobi.

#### **Format of the Conference Presentations and Participants**

The conference event will consist of an opening session at which various key note speakers will present on various selected themes followed by a high-level interactive panel discussions and plenary.

The KNAS Fellows and Members are invited to participate at this event at the expense of the Academy while the other participants, drawn from the public and private sector, civil society, academia, UN Agencies and other relevant stakeholders will pay a subsidised participation

fee of Kenya shillings two thousand (KES 2,000) to cater for the teas, lunch, water and conference materials.

### **Instructions for Presenters:**

Invited speakers should forward their presentations in electronic form to Prof. Vasey Mwaja; the Editor-in-Chief, Kenya National Academy of Sciences (KNAS) to the following contacts: [vaseym@knasciences.or.ke](mailto:vaseym@knasciences.or.ke) or [vsmwaja5@gmail.com](mailto:vsmwaja5@gmail.com) and [info@knasciences.or.ke](mailto:info@knasciences.or.ke).

**Registration for participation in the conference is open at the KNAS website: [www.knasciences.or.ke](http://www.knasciences.or.ke).**

## **6. SRDA 2024 Local Organizing Committee**

- Prof. Ratemo W. Michieka -President, KNAS
- Prof. Paul Baki -Hon. Secretary, KNAS
- Prof. Vasey Mwaja -Editor-in-Chief, KNAS
- Dr. Julius Sindi -Member, APHRC
- Dr. Romanus Opiyo -Member, SEI
- Dr. Daniel Karanja -Member, DRST-MoE
- Prof. Timothy Maitho -Asst. Sec., BHS, KNAS
- Prof. Joash Aluoch -Member, KNAS
- Prof. Jones Agwata -Member, KNAS
- Ronald Kimutai -Member, EIK
- Bernard Mutui -Secretariat, KNAS
- Edward Ayienda -Secretariat, KNAS

## REFERENCES

Aunan, K., G. Patzay, H. Asbjorn Aaheim and H. Martin Seip (1998), "Health and Environmental Benefits from Air pollution Reductions in Hungary", *Science of the Total Environment* 212: 245-268.

Colburn, T., D. Dumanoski and I.P. Meyers (1996), *Our Stolen Future*, Little, Brown and Company, London.

De Hollander, A.E.M., I. M. Meise, E. Lebret and P.G.N. Kramers (1999), "An Aggregate Public Health Indicator to Represent the Impact of Multiple Environmental Exposures": *Epidemiology*: 606-617.

Meise, I.M. and A.E.M. de Hollander (2001), "Human Health and the Environment", background document for the OECD *Environmental Outlook*, OECD, Paris.

McMichael, A.I. (1999), "From Hazard to Habitat; Rethinking Environment and Health", *Epidemiology*:460-464.

Murray, C.J.L. and A.D. Lopez (eds) (1996), *The Global Burden of Disease*, Harvard School of Public Health (on behalf of WHO and the World Bank), Harvard University Press. Cambridge.

Newman, I., N. Beg, J. Corfee-Morlot and G. McGlynn (2001), "Energy and Climate Change: Trends, Drivers, Outlook and Policy Options". Background document for the OECD *Environmental Outlook*, OECD, Paris.

OECD (1999a). "Health Data 99: A Comparative Analysis of 29 Countries", CD-Rom. OECD, Paris.

OECD (1999b). *Environmental Performance Review: Turkey*, OECD. Paris. Or. Z. (2000), "Determinants of Health Outcomes in Industrialised Countries: A Pooled, Cross-country, Time-series Analysis", *OECD Economic Studies* 30: 53-77.



Ruwaard, D. and P.G.N. Kramers (1998). *Public Health Status and Forecasts Report 1997*, RIVM/Elsevier-de Tijdstroom, Bilthoven/Maarsse.

UNEP/RNM (United Nations Environment Programme; Dutch National Institute of Public Health and Environment) (1999). edited by Van Vuuren. D.P. and I.A. Bakkes, *Alternative Policy Study: Environment and Energy in Europe and Central Asia 1990-2010*, UNEP/RIVM, Geneva/Bilthoven.

Smith. R.K., C.F. Corvalan and T. Kjellström (1999), "How Much Global Health Is Attributable to Environmental Factors?", *Epidemiology*: 573-584.

WHO (World Health Organisation) (1999), *World Health Report: Making a Difference*. WHO, Geneva.

World Bank (1999), *World Development Indicators*, World Bank. Washington DC.