

# SA Swiss Bilateral SARChi Chair in Global Environmental Health



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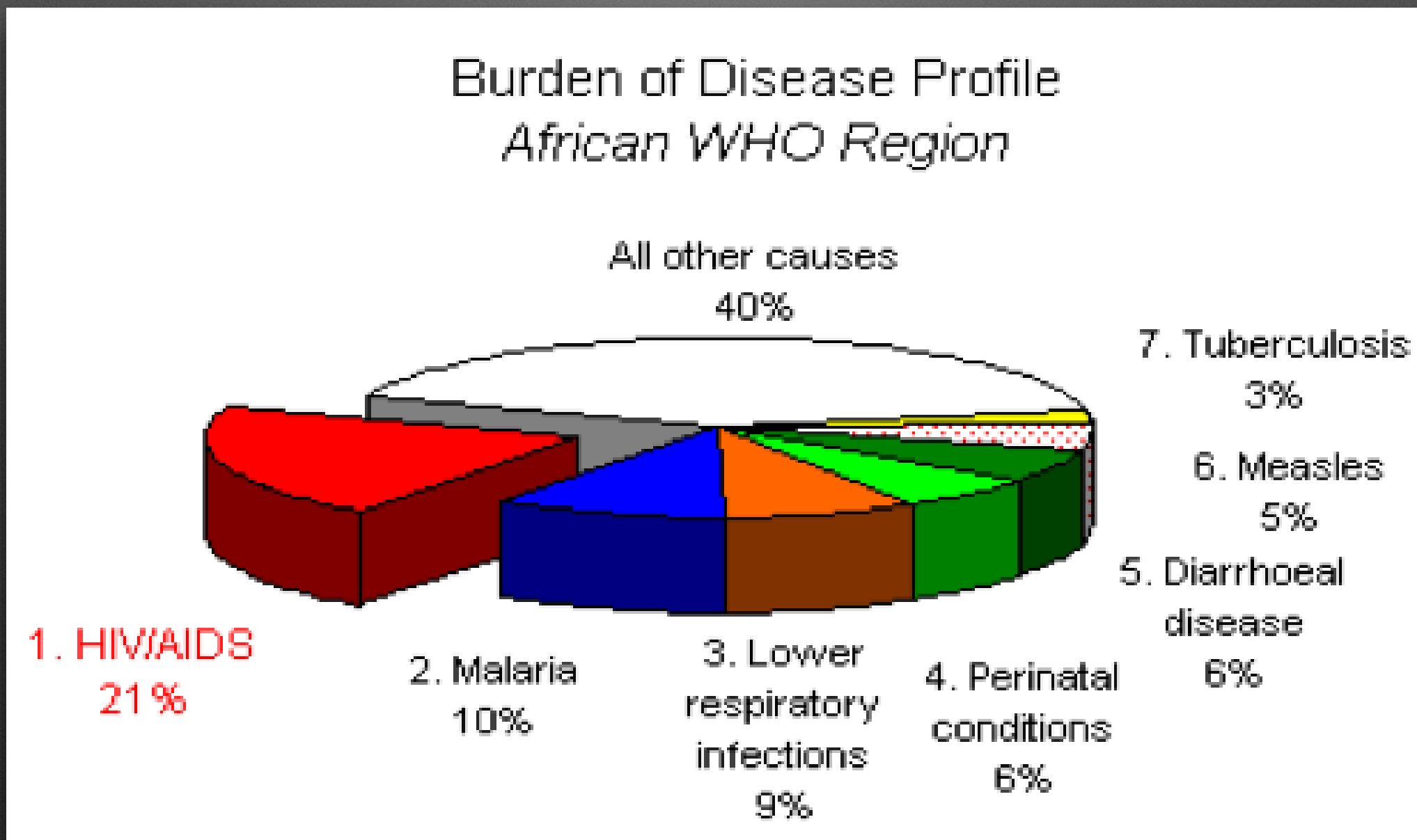
Funded by SA National Research Foundation, co-funded by SA DST, Swiss State  
Secretariat for Education, Research and Innovation, Unibas/Swiss TPH







In Africa, the health impacts due to environmental exposures are significant public health problems





# Reducing hazardous environmental exposures is crucial and a sustainable way of development in LMIC's

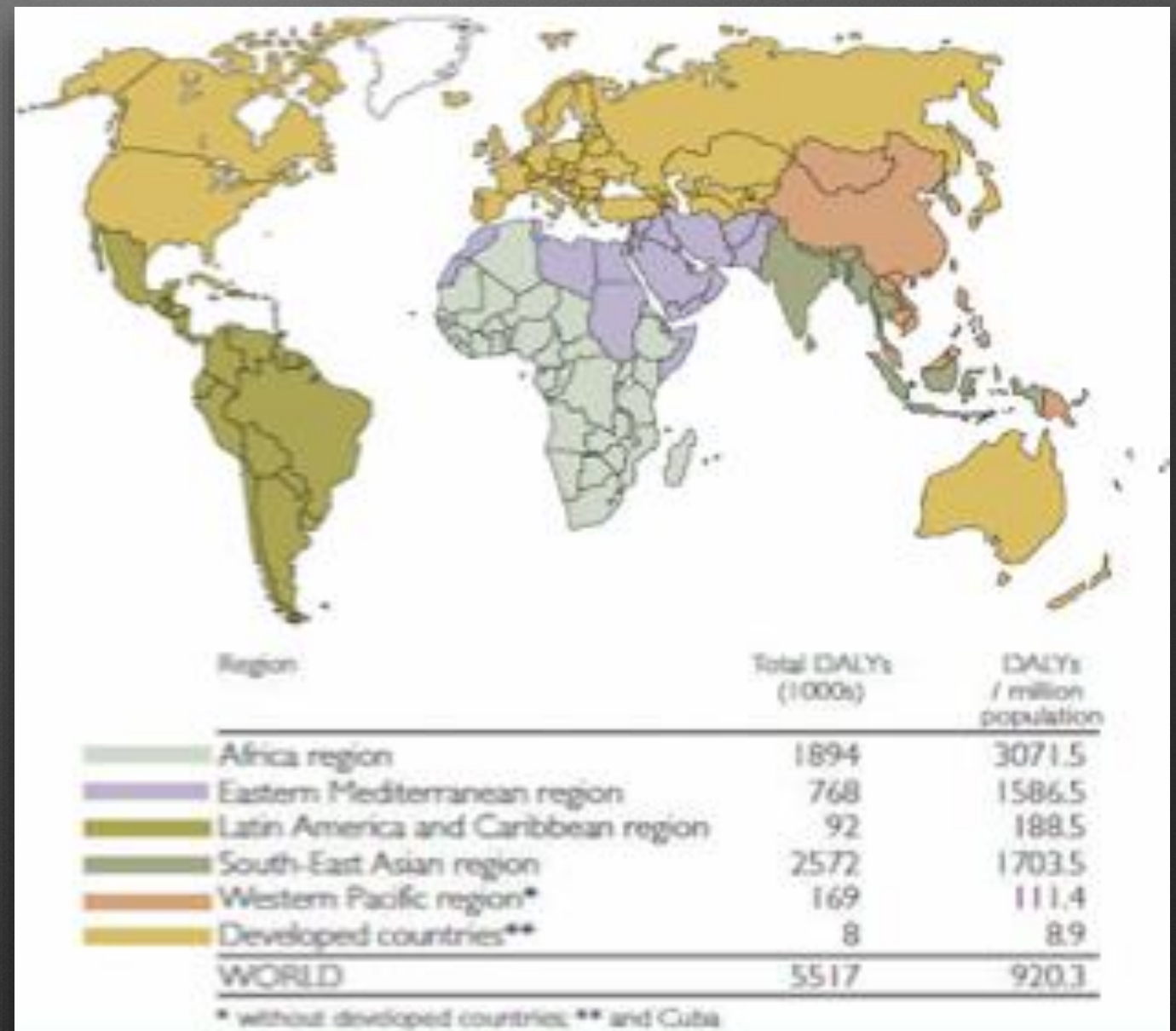
- Poor communities are most vulnerable to hazardous exposures.
- Environmental exposures associated ↑non-communicable diseases (e.g. cardio-vascular disorders, chronic lung diseases)
- ↓ health → lost of productivity of the workforce & ↑health related costs (NIEHS, 2010)





# Environmental health burden in Africa is significant

The lack of environmental health data in Africa which is undergoing rapid development and high potential exposures amongst environmentally marginalised communities make the research in this setting important (World Bank, 2006).





# Research Program for Chair in Global Environmental Health

## Goal:

to increase the knowledge of diseases caused by environmental exposures of local and international importance.

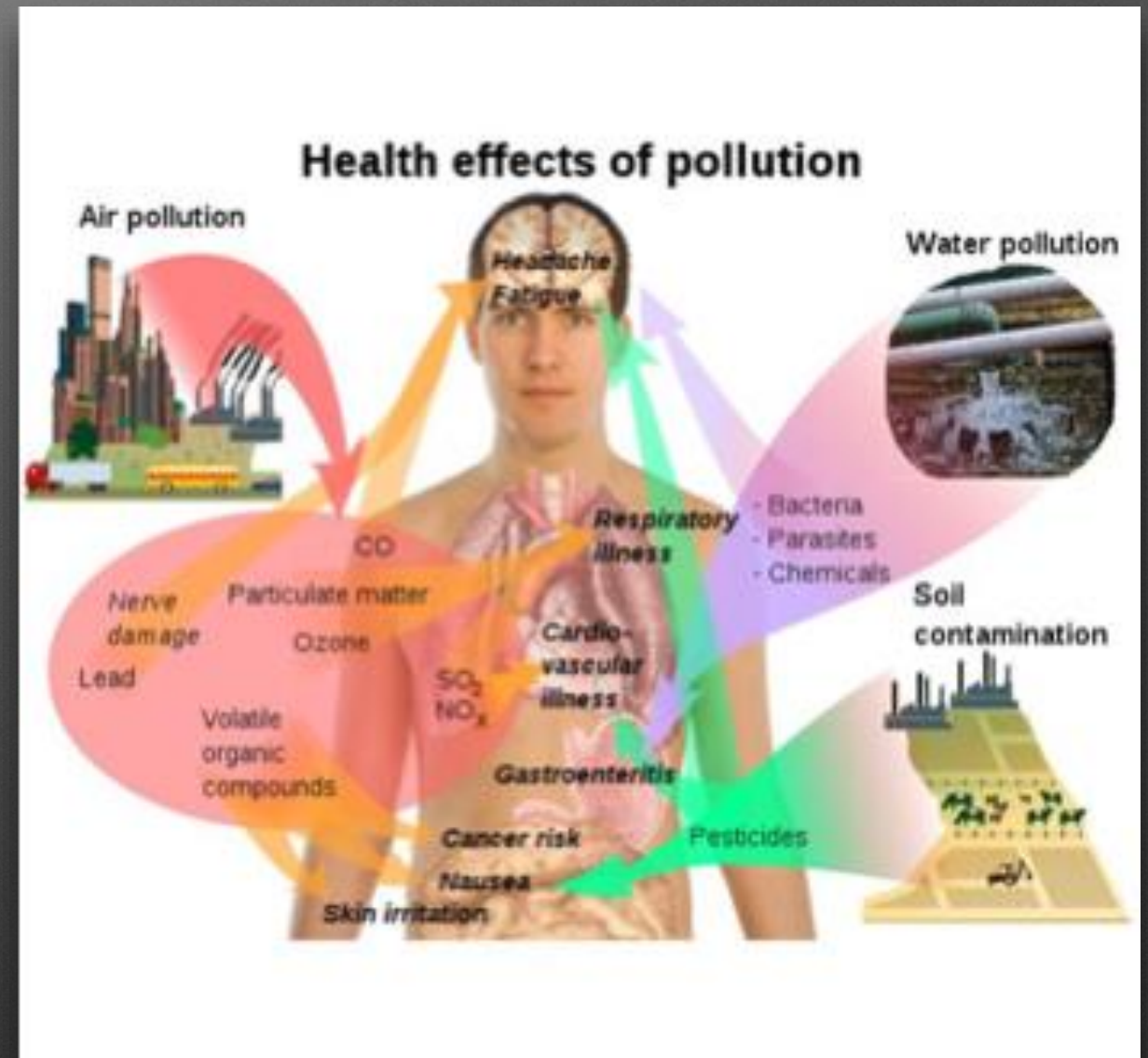
## Focus:

areas of research strengths at UCT & STPH/Unibas

- Project 1: Pesticide effects on reproduction/development & asthma on children
- Project 2: Effects of air pollution on childhood asthma
- Project 3: Water pollution and health including diarrhoea
- Project 4: Climate change and health

## Cross-cutting concepts:

- Children
- Chemicals



Chair Lead and Projects General Coordination: Aqiel Dalvie (CH), Martin Roosli (CH)



# Project 1: Agricultural pesticides and child health

- Longitudinal study of reproductive/developmental effects and asthma caused by agricultural pesticides currently in use in SA (among rural children in the Western Cape).
- Assumption: Preliminary evidence from previous cross-sectional epidemiological and exposure characterisation studies.
- Proposed study will use most sensitive exposure and health outcomes markers using state of the art techniques.





# Project 2: Ambient air pollutants and childhood respiratory health

- Longitudinal study of children exposed to ambient air pollutants (PM10 & 2.5, NO2, SO2, CO, O3, pollen) in 3 priority areas in the Western Cape.
- Adverse health outcome of interest is asthma.
- Exposure methods include air monitoring (particulate matter, chemicals, pollen), GIS and land-regression modelling.
- Health indicators include exhaled nitrogen oxide, spirometry and tests for allergies.
- Studies on health effects of noise and electromagnetic radiation.





# Project 3: Water Pollution and Health

- Water pollution is a major cause of death and disease globally (WHO, 2013).
- The human health risks of chemical (pesticides, metals) and bio-contaminated (pathogens) water and soil including diarrhoea surveillance will be studied in a developing country context using an Eco Health approach.
- Study areas will include both urban and rural settings.

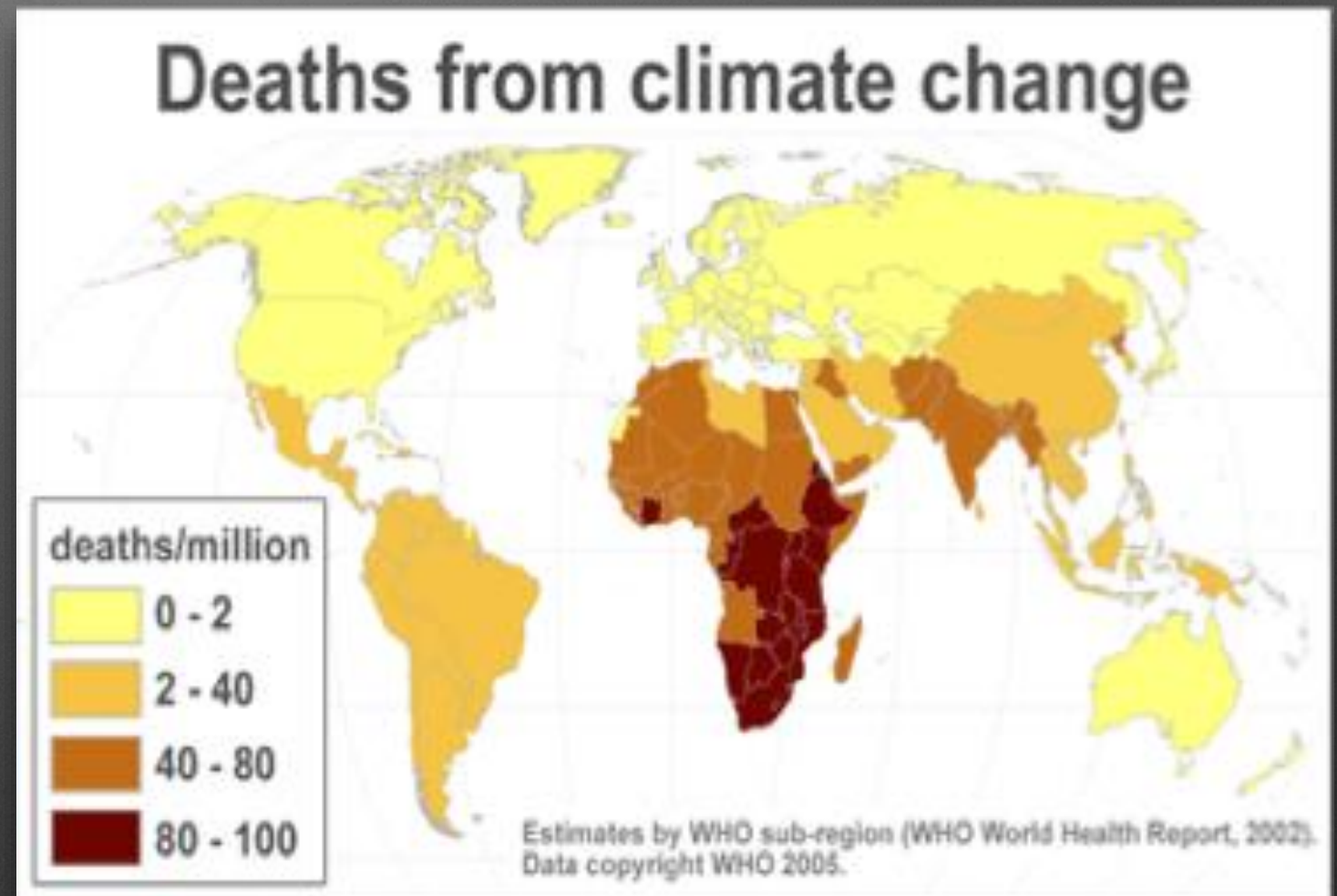


Coordination/Lead Project 3 : Aqiel Dalvie (SA), Guéladio Cissé (CH)



# Project 4: Climate Change and Health

- Study of the relationship between trends in climate change, water and air pollution, chemical usage, and health
- Involves prospective and retrospective modelling & vulnerabilities assessment and adaptation challenges in Western Cape and SA.





# Research Training and Capacity Development

## Crucial outcome of study:

- Post-graduate training
- Academic development
- Training of environmental health officers
- Training of health professionals

→ **strengthen health system**





# Research Translation to advance Public Health Impact

The study results also will be used in a programme of translating the research findings to:

- a) Improve community awareness
- b) Inform influential stakeholders to improve policy interventions on pesticide usage, air pollution, safe water usage, climate change adaptation challenges





# Collaborations

## Swiss Collaborators

- Main Swiss partners (Epidemiology and Public Health, Swiss TPH, STI, Unibas)
- Martin Roosli (Head of Unit for Environmental Exposures and Health)
- Guéladio Cissé (Ecosystem Health Sciences Unit)
- Miing Tsai (Unit for Environmental Exposures and Health)

## Other Swiss Collaborators (listed alphabetically by surname)

- Brigitte Obrist (Center for Social Anthropology)
- Christian Schindler (The Biostatistics Unit)
- Constanze Pfeiffer (Gender and Health)
- Daniel Mäusezahl (Health Systems Research and Dynamical Modelling Unit)
- Danielle Vienneau (Unit for Environmental Exposures and Health)
- Jürg Utzinger (Head the Ecosystem Health Sciences Unit)
- Kees de Hoogh (Unit for Environmental Exposures and Health)
- Martin Wilks (Swiss Centre for Applied Human Toxicology)
- Nino Künzli (Head of Department of Epidemiology and Public Health)
- Nicole Probst-Hensch (Deputy Head of Department of Epidemiology and Public Health)
- Peter Steinmann (Swiss Centre for International Health)
- Rex FitzGerald (Swiss Centre for Applied Human Toxicology)
- Veit Arlt (Center for African Studies, Unibas)

## Further International Collaborators

- Prof. Melissa Perry (The George Washington University)
- Prof. Mary Lee (University of Massachusetts Medical School)
- Hans Kromhout (University of Utrecht, Netherlands)

## South African Collaborators

- CPUT (Environmental and Occupational Health Studies)
- Hennie van der Wetshuizen
- Roslyn Baatjies
- Brian Delcarme
- Mike Agenbag
- De Wet Shutte
- Izanne Human

## Other SA Institutions

- Dilys Berman (Pollen Sampling)
- Eugene Cairncross (retired CPUT)
- Rajen Naidoo (Occupational Medicine, University KZN)
- Tanusha Singh (Head of Immunology & Microbiology)
- The Department of Environmental Health and Development Planning
- Department of Health

## UCT CEOHR

- Hanna-Andrea Rother
- Leslie London
- Mohamed Jeebhay
- Zelda Holtman

## UCT Other Departments

- Lubbe Weisner (Pharmacology)
- Lorena Pasquini (ACDI)
- Mark New (ACDI)
- Steven Delport (School of Child and Adolescent Health)
- Harro Von Blottnitz (Department of Chemical Engineering)
- Department of Clinical Laboratory Sciences
- Raj Ramesar (Genetics)







# Students

## PHD



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## Masters



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Farzana Sataar



Jun Mao



Benett Madonzela

Roycent Tumbare

Tracy Glass



Thank you!