Climate change adaptation to protect human health

KENYA

This summary gives an overview of the aims, activities, challenges and results of the project "Climate change adaptation to protect human health" for Kenya.

Project background

The "Climate change adaptation to protect human health" project is a global initiative jointly implemented by the World Health Organization (WHO) and United Nations Development Programme (UNDP). The seven pilot countries were Barbados, Bhutan, China, Fiji, Jordan, Kenya and Uzbekistan. The project was co-funded by the Global Environment Facility (GEF) Special Climate Change Fund (SCCF).

Overall project goal

The series of pilot projects aimed to "increase adaptive capacity of national health system institutions, including field practitioners, to respond to climate-sensitive health risks".

Kenya at a glance

Kenya, with a population of 43.0 million people, is located in eastern Africa between Somalia and Tanzania, bordering the Indian Ocean. The country covers an area of 580 609 km² with 11 362 km² under water, making a total area of 591 971 km². The climate in Kenya is equatorial tropical, hot and humid in the coast, temperate inland and very dry in the north and north-east of the country. The terrain ranges from low plains to highlands.

Climate change and health in Kenya

Malaria has always existed in Kenya; however, in the past, the higher altitudes of the highlands region limited highland malaria transmission to seasonal outbreaks, with considerable year-to-year variation (Fig. 1).

- With climate change, it is expected that the intensity as well as the length of the transmission season will increase in areas where malaria already occurs.
- The disease may also spread to new locations, particularly to the higher altitudes of the highlands (Fig. 1), where its prevalence is not currently actively monitored or forecasted. Communities living at altitudes above 1100 meters are more vulnerable to malaria epidemics due to a lack of immunity, lack of preparedness, climate variability and other factors.

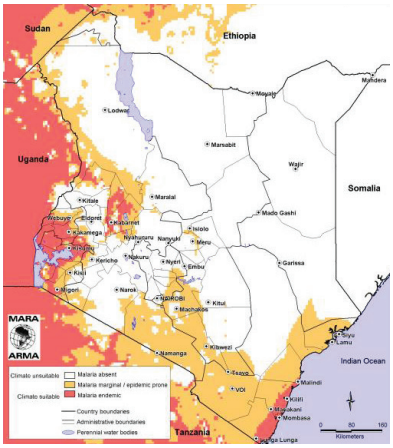

Fig. 1: Reference map of highland malaria in Kenya, Mapping Malaria Risk in Africa project (MARA)

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Other expected health effects of climate change in Kenya include the following:

- Increase in acute respiratory infections in arid and semi-arid land (ASAL) areas
- Increase in diarrhoeal diseases in areas facing water scarcity
- Emergence and re-emergence of Rift Valley Fever
- Increase in cases of leishmaniasis and malnutrition
- Increase in floods and occasional outbreaks of waterborne diseases such as cholera, dysentery and typhoid in lowland areas.

Objectives of the Kenya project

The specific objective of the project in Kenya was to strengthen the existing intervention programmes for malaria in Kenya and to improve adaptive capacity to respond to the increased risk of malaria. Malaria was chosen in view of the large number of people at risk for the disease (approximately 20 million people, corresponding to 70% of the population), its association with climate variability and the growing evidence of the effects of climate change, including the increased risk of highland malaria in Kenya.

The main expected national benefit from this project is the reduction in the burden of highland malaria epidemics.

The project was implemented by the Department of Environmental Health (DEH) of the Ministry of Public Health and Sanitation (MOPHS) of Kenya (Fig. 2). The DEH worked with WHO under the usual bilateral relationship of technical support to the Ministry of Health. Other government agencies involved in project implementation included the Malaria Control Program and the Ministry of Environment, Water and Natural Resources (Kenya Meteorological Services).

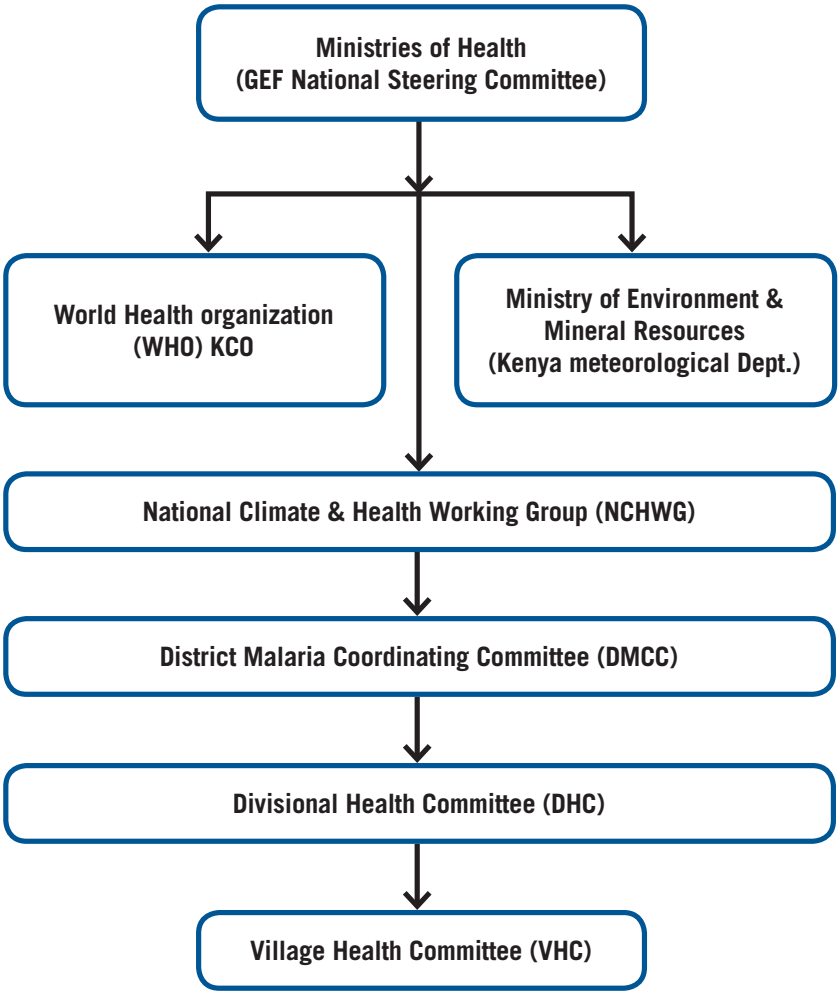

Fig. 2: The institutional arrangements for project implementation in Kenya

Barriers/challenges to implementation of the various strategies, policies and procedures

Many barriers to effective health adaptation in relation to climate change existed when the project started:

- Limited access to short-term and long-term health-specific weather data at the community, district and national levels, as well as deficiencies in the quality of routinely collected health data;
- Lack of availability of resources for epidemic preparedness plans.

At the outset of the project, 50% of the district health managers participating in a focus group discussion (15 respondents) considered their response plans to climate-sensitive health risks ineffective; and 50% thought that interagency and intersectoral barriers prevented effective responses.

Solutions

- Improved use of weather forecasting has proved to be crucial for implementing the project.
- Lack of capacity of critical health personnel was overcome with continuous capacity building and technical assistance from who.

Main outcomes and outputs: climate change adaptation in Kenya

The three global outcomes defined for the project on "Piloting Climate Change Adaptation to Protect Human Health" were adjusted to the specific context of Kenya and its identified health risks related to climate change.

Outcome 1

Early warning and response systems with information on the likely incidence of climate-sensitive health outcomes established

In the frame of this project, early warning for climate-sensitive diseases was aimed at specifically detecting malaria epidemic risks with sufficient lead time for initiating an effective response. A main element was the correlation of meteorological data with malaria data, suitable for use by district-level health officers. In view of the effects of climate change, the Kenyan malaria early warning system (KMEWS) monitors any changes in the geographical range or seasonality of the disease. At the end of the project, early warning information was available three months in advance at 100% of the pilot districts, and case sensitivity and specificity increased to >68%. The adjusted burden of malaria cases was lowered to <10% due to a strengthened prevention, detection and response system.

The steps towards implementation of the KMEWS included the following:

- Development and validation of a malaria early warning statistical model, and development of a kenyan malaria early warning e-data prediction and decision-making software;
- Finalization of data entry and multiple access via dropbox, incorporating critical control points for quality assurance (QA)/quality control (QC), and developing a browser-/internet-linked protocol and a browser-based MEWS e-data navigation tool;
- Field-based software installation and staff induction; two data entry forms (climate and malaria) were designed with offline access mode and automatic upload/update once internet connectivity is established;
- Design and development of internet-based modules for wider access and application of the malaria early warning system, publicly known as the KMEWS (www.climate.health.go.ke);
- Installation of seven automatic weather stations (AWS) for an enhanced climatic data network and training of a meteorological officer in routine maintenance. Computers, printers and enhanced internet access were established for enhanced health data entry, retrieval and transmission.

Outcome 2

Capacity of health sector institutions to respond to climate-sensitive health risks based on early warning information improved

Under Outcome 2, the capacity of health sector institutions and availability of timely information for the health system to develop malaria response plans were improved. Institutional capacity as well as human resources were strengthened. The aim was to familiarize district health officers with the use of decision-support systems, including meteorological data, and to increase the effectiveness of malaria control, considering the elevated transmission and spread driven by climate change. As the main output for this outcome, all district malaria prevention managers gained the skills and the capacity required to develop and interpret the long-term malaria prediction charts, and develop appropriate response measures to prevent a malaria epidemic.

- Project activities strengthened the institutional environment for health and climate change at the national level, giving further support for the implementation of the national climate change and health adaptation plan of action.
- A five-day hands-on capacity-building workshop was held for national and field managers on KMEWS management. The workshop focused on presentation and reading of data and graphs, interpretation of data (i.e. actual, threshold and prediction of the line graph), and interpretation of the trend graph using the two sites (i.e. control and test sites).

- In 2014, an international five-day workshop on climate and health data analysis for early warning systems was held in Nairobi. It was attended by representatives from all UNDP/WHO/GEF project countries, as well as representatives from Tanzania and Malawi.
- Representatives from Kenya also took part in an intercountry seminar in China to share experiences on early warning systems for health.

Outcome 3

Disease prevention measures piloted in areas of heightened health risk due to climate change

In the case of Kenya, effective malaria epidemic prevention measures were implemented at the community and health-facility level:

- Awareness-raising and social mobilization for risk reduction and ad-hoc cross-sectional nutritional and livelihood surveys were undertaken.
- An e-platform was set up and implemented in all pilot facilities for real-time reporting of activities at the district level.
- A health alert system for climate-sensitive diseases was completed.

Lessons learned

» Continued capacity building and community involvement is required for successful interventions in the future.

» Sustained collaboration and partnership in a multistakeholder engagement is critical for ensuring smooth implementation of the project.

» Recognition of climate change risk factors and their linkages to health problems is still low in the country, and cont inuous efforts to raise awareness need to be undertaken.

Efforts to ensure sustainability of the structures and measures

- Contingency response plans with clearly defined stakeholder roles and responsibilities were developed.
- Two draft proposals targeting the Green Climate Fund and GEF/SCCF were developed to secure funding for future activities.

Opportunities to scale up

The KMEWS could be used as early warning in broader areas for modelling the effects of weather and climate on other climate-sensitive diseases.

- Best approaches were explored for integrating climate change adaptation in health sector programming.
- Collaborative roles were identified for WHO/Department for International Development (DFID)/GIZ programmatic support in scaling up epidemic early warning systems in Kenya.
- Activation of the Climate and Health Secretariat chaired by the Principal Secretary (MOH) and the coordination role of the climate change and health adaptation desk officer within the MOH were planned to be supported by WHO.
- A detailed collaborative proposal for up-scaling the early warning model in ASAL regions was planned to be put forward by WHO.
- Public sector information was developed and shared with a risk communication network for the resulting early warning messages.

Key product

A key product that may be of interest to other regions or countries is the following:

- Kenya Malaria Early Warning System (KMEWS) www.climate.health.go.ke

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