Health risk management in a changing climate: A global approach to building local capacity

Climate change means that health risks are changing and have to be addressed in the context of increasing uncertainty. However, there is a lack of practical experience on how these rising risks can be managed, especially at local level. Red Cross Red Crescent staff worldwide show strong concern regarding the health impacts of climate change. Their expressed need for concrete advice and case studies of how to address climate change related health risks lie behind this project.

This project seeks to generate experience by putting knowledge of changing risks into practice in health risk management at community level, with a focus on the most vulnerable people who are likely to be most affected. Lessons learned will feed into global guidance and tools which can readily be scaled up throughout the Red Cross and Red Crescent Movement worldwide. The knowledge generated will also be highly relevant to the wider health and humanitarian communities, and broader adaptation policy and practice.

The different project components aim to further the understanding on how to deal with two of the main challenges to health posed by climate change by focusing on extreme events in East Africa and gradual changes in vector-borne diseases in Southeast Asia. These two components feed the global learning component which runs throughout the project, extracting lessons learned at every stage. This enables the benefits to reach far beyond the project implementation sites, enhancing health work in the rest of the Red Cross and Red Crescent Movement, and ultimately informing the global dialogue on adaptation to health risks posed by climate change.

1) EAST AFRICA: Managing infectious disease risk given changing precipitation extremes

2) SOUTHEAST ASIA: Managing changing geographical and seasonal patterns of dengue

3) GLOBAL: Evaluation, lessons learned, global guidance and tools

1. EAST AFRICA
Managing infectious disease risk given changing precipitation extremes

Background and rationale

One of the main routes through which climate change affects health is through an increase in the frequency and intensity of extreme events such as flooding or drought. Red Cross Red Crescent staff in the field and community members are confronted with increased variability of precipitation and climate change means that there is increased uncertainty about the pattern of this variability. Past experience alone is no longer fully adequate to cope with the risks faced today and to prepare for the future. This message must reach vulnerable communities, so they can better manage the changing risks.

After flood events, infectious diseases have been shown to be more common. This includes diarrhoeal diseases, vector-borne diseases such as malaria, as well as rodent-borne diseases. (Ahern et al 2005[1]). Improving the use of early warning information on different time-scales to guide health interventions within the Red Cross Red Crescent and communities is key.

This concept of 'early warning early action' has been shown to work within the sector of disaster management – a sector perhaps more used to dealing with risk and unpredictability. This now needs to be applied to the health sector. The improved use of early warning systems must go hand in hand with a stronger collaboration between Disaster Management, Water and Sanitation and Health and Care staff at every stage of the planning and response cycle. Examples of 'early action' includes alerting communities on hygiene and sanitation measures, pre-positioning stocks for water purification and distributing bednets to reduce the risk of getting malaria. Water and sanitation disaster response kits are available for use during flood events. *A key focus of the project is to define how best to bring messages of climate change and the links with health to community level.*

However, getting the use of climate information mainstreamed within the Red Cross Red Crescent and down to community level is not straightforward. There are many reasons why early warning information is not used such as difficulties to accessing, understanding and disseminating information and having the capacity to act. *This proposal seeks to characterise these challenges and ways to overcome them.*

In summary, the East Africa component is focussed on two key areas of operational work:

> *National level partnership with meteorology services:* Here the objective is to define how an operational organisation like the Red Cross best collaborate with meteorology services to ensure a user driven, operationally relevant supply of information. This will be defined through a process where the Red Cross defines its operational needs for climate information and work with national meteorology services to meet those needs.
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> *Operational work at community level:* The objective is to define how best to bring messages of changing risks and the concept of early warning and early action to communities. This will be defined through surveying community knowledge and careful design of educational materials.

Throughout the work, another objective is to define how different departments within the National Society *such as health and care, water and sanitation and disaster management staff best cooperate to optimise the use of early warning information.*

Project sites

East Africa in particular is a region which is expected to suffer increased variability of precipitation (in several areas likely including more floods *and* more droughts) as a result of climate change and where the burden of diarrhoeal disease is already high.

In Tanzania the community level work will take place in Tanga, a city on the Indian Ocean. During a community assessment in the past, diarrhoeal disease as well as malaria were quoted as problems by community members. The Tanzania Red Cross have identified three rural

[1] Ahern M, Kovats RS, Wilkinson P, Few R, Matthies F. Global health impacts of floods: epidemiologic evidence. Epidemiol Rev. 2005;27:36-46.

communities and one suburb of Tanga city as target communities. They will reach around 30 000 beneficiaries in the rural areas and another 60 000 in the suburb of Tanga city.

In Kenya the site is Nyando district in Nyanza province which neighbours Kisumu town. The river basins receive frequent torrential showers and flash floods. The major health problems in this district, particularly after flooding, are diarrhoeal disease and malaria. The Kenya Red Cross (KRC) will work to reduce these risks for 60 000 beneficiaries in this peri-urban and rural setting.

Project detail

At the start of the project, interviews and surveys will be used to characterise the understanding of National Red Cross staff of climate change, disease risk and the use of climate information for early warning and planning of response.

At community level, a Vulnerability and Capacity Assessment will be carried out, which is a process commonly employed within the Red Cross Red Crescent Movement. It will seek to identify and understand the main health challenges faced by the communities while employing the capacities inherent within the affected communities to address these risk, including and any local indigenous early warning systems. A mapping exercise of flood and drought risk will also be carried out. These processes will provide valuable information on baseline understanding in the communities of climate and changing health risks as well as approaches to deal with these risks at community level.

A table-top exercise (simulation) will be carried out within the Red Cross National Society itself to determine what decisions are taken and actions carried out to prevent health risks during flooding or drought. This will, together with the results from the community VCA, form the starting point to discuss how climate information at different timescales would be able to help the Red Cross better prevent and manage health risks. The Tanzanian and Kenyan Red Cross National Societies will then meet with their respective meteorology services to discuss their needs and find out what climate information is available. The Red Cross will then update procedures and contingency plans as appropriate. The evaluation of this process will give key insights into opportunities and challenges in communications with meteorology services which will inform such processes elsewhere.

Key focal persons within the communities will also be identified and trained to ensure that community members are an active part of the early warning – early action process. There will be a large amount of activities geared to sensitise the communities on the issues of changing risks and health problems related with extremes of rainfall with a focus on hygiene, water and sanitation. Surveys and focus groups will help evaluate how best to communicate messages of hygiene, water and sanitation in the context of changing risks due to climate change. The developed system for early warning and preventative health action will be tested through rehearsals and simulations, and in practice in case an extreme precipitation event would occur during project implementation, with appropriate monitoring of changed attitudes and practices. Evaluation of rehearsals or actual response will give insights into how the process has been improved with climate information.

The project will build on the existing partnership between the International Federation of red Cross and Red Crescent Societies and the International Research Institute for Climate and Society at Columbia University (IRI), in particular the current efforts to create a ‘maproom’ for the region of East Africa with climate information on different time scales.

The International Federation zone office in Nairobi will be responsible for day to day project management for Kenya and Tanzania. The work in Kenya will be carried out by the Kisumu

branch, under supervision by the Kenya Red Cross headquarters in Nairobi. The work in Tanzania will be carried out by the Tanga branch, under supervision by the Tanzania Red Cross headquarters in Dar es Salaam.

2. SOUTHEAST ASIA
Managing changing geographical and seasonal patterns of dengue

Background and rationale

Climate change is also expected to have effects on health through changes in the spatial and temporal distribution of climate-sensitive vector-borne diseases such as dengue. For example, increased levels of rainfall or flooding means that water collects in stagnant pools which provides breeding grounds for mosquitoes. Low rainfall can also increase rates as people store more water in the home and these containers provide breeding sites. An increase in temperature can affect mosquito development. However, the distribution of dengue is also dependent on factors such as population movement and urbanisation.

There are currently no operational early warning systems for dengue that are based on climate information, allowing for early action[2]. In the absence of such an early warning system, it is essential to have a good surveillance system to detect and address the changing disease patterns, and use it to guide preventive interventions. In order to enhance the use of surveillance data and detect changing patterns, the project will strengthen existing links between the National Societies and ministries of health (responsible for surveillance) together with other partners such as the World Health Organisation country offices. The aim is to enable Red Cross staff to stay aware in case seasonal or geographical patterns change. Such information will inform the planning of the National Red Cross dengue prevention work at community level. *This proposal seeks to characterise the process of building on the current partnership with the Ministries of Health including possible challenges and ways to overcome them.*

The community work is particularly focused on the importance of removal of mosquito breeding sites. Other measures include using larvicide or guppy fish in water containers. Community members also need to be aware of ways to prevent mosquito bites and when to seek care. In this context we will look at how to communicate that dengue risks could be changing. Given the complex nature of dengue transmission, it is not clear how climate change will influence transmission and it is a challenge to determine what messages to give at community level. There may for example be many misconceptions present about climate change and dengue, in which case it may be important to provide correct and balanced information. *This project will evaluate how different messages on climate risk are perceived by communities.*

The use of different potential communication tools will be explored also in Southeast Asia, such as mobile phones or radio to alert communities as appropriate. This may include alerting communities to an outbreak and reinforce health messages.

In summary, the Southeast Asia component, the project is focussed on two key areas of operational work:

> *National level partnership with ministries of health:* Here the objective is to define how an operational organisation like the Red Cross best stay aware in case the spatiotemporal

[2] There are only a few operational climate information-based early warning systems for vector-borne diseases, such as one for malaria in Southern Africa

patterns of a climate sensitive disease changes. This will be done to building on the existing auxiliary relationship between the Red Cross and Ministries of Health to ensure that this collaboration appropriately covers climate sensitive diseases such as dengue.

Operational work at community level: The objective is to define how best to bring messages of changing risks and the links between climate factors and dengue to communities, in the context of the many other factors that influence disease distribution. This will be defined through surveying community knowledge and careful design of educational materials. Another objective of the work at community levels is to further build the capacity of the Red Cross to carry out dengue prevention work.

Project sites

For the community level arm of this project the Vietnamese National Red Cross (VNRC) have chosen to work in Ho Chi Minh City and Tien Giang, targeting a total of 48 000 beneficiaries. These are cities with a high disease burden, peaking in the rainy season. In addition, the cities are subjected to frequent flooding which result in the accumulation of pools of standing water due to poor drainage in the urban areas. The VNRC observes that there has been an increase in the severity of dengue outbreaks with the severity of flooding.

The Indonesian Red Cross (Palang Merah Indonesia – PMI) will focus on communities within Jakarta where branches are located, serving approximately 150,000 - 200,000 beneficiaries. Studies suggest that dengue is related to rainfall patterns and as climate change is expected to increase the seasonality of precipitation, this has prompted concern within the Indonesian Red Cross (Palang Merah Indonesia - PMI) that the number of years with a large number of dengue cases will increase.

Project detail

Following a baseline survey, volunteers will be recruited and trained on climate change, dengue as well as communication skills. There will also be dedicated training for Red Cross staff on climate change. The Red Cross will design and produce Information, Education and Communication (IEC) materials, incorporating messages of changing risks, which will be used when volunteers are mobilised. In the communities, volunteers will raise awareness on dengue and climate change through meetings with communities and schools and such messages will also be given through mass-media campaigns. They will also conduct environmental cleanup campaigns in schools and communities. Baseline and end of project evaluations as well as focus group sessions and interviews during implementation will determine how best to train volunteers on changing risks and how best to communicate this message to the community.

The capacity of Red Cross staff to stay aware and address changing risks will also be addressed through meetings with ministries of health, WHO and other partners at *national* level. This is to ensure that current partnerships address the joint challenge of changing risks through sharing of surveillance information and joint planning as appropriate. This includes establishing mechanisms at Red Cross National headquarters to regularly monitor available data. This process will be evaluated through interviews and review of meeting protocols.

The lessons learned from the work on dengue in Southeast Asia will also feed into the Rockefeller Asian Cities Climate Change Resilience Network (ACCCRN).

In Southeast Asia, day to day project management will be provided by the International Federation country offices in Vietnam and Indonesia respectively. The Southeast Asia regional office located in Bangkok will be responsible for the shared learning aspect through regional workshops.

The work in Vietnam will be carried out by the Health and Care departments of Ho Chi Minh and Tien Gang branches, under supervision by the Health and Care department of Vietnam Red Cross headquarters in Hanoi. The work in Indonesia will be carried out by the Health and Care departments of selected branches in Jakarta under supervision by the Health and Care department of the Indonesia Red Cross headquarters in Jakarta.

3. GLOBAL
Evaluation, lessons learned, global guidance and tools

The core aim of the project is to extract lessons learned, which means that evaluation forms a central part of this project. The starting point is from a practice perspective whereby consideration of changing risks are integrated into Red Cross Red Crescent work with the objective of methodically learning from each aspect of preparation and implementation. This will ensure that the lessons learned will be relevant to operations and that models and frameworks are developed that can be of real use.

The Climate Centre will be responsible for overall coordination of the evaluation and synthesis of the lessons learned of how to integrate climate risk management into local health programs. This will be achieved through the involvement of external academic and other experts, assisting in the detailed design of the overall evaluation framework. In particular we will work with the Centre for Environmental Decision-making (CRED) at Columbia University. Local experts as well as local or international masters or PhD students will also be engaged to help carry out the work at country level. This process will be integrated with the regular evaluation work that each National Red Cross does in terms of baseline impact on the community of the program, but will go deeper in terms of also looking at the processes of how this is achieved, including the work with partners such as ministries of health and meteorology services.

Early experience and lessons learned will be shared among countries in the two regions through regional workshops where participating National Societies can share ideas and experiences with each other. Other National Societies can give feedback on educational materials and protocols. This will serve help such products be useful beyond the four participating National Societies.

The aim is to produce global guidance and tools for use throughout the Red Cross Red Crescent Movement. One of the unique strengths of the Movement worldwide is the ability to not only scale up lessons learned but also to adapt them to local conditions. With National Red Cross or Red Crescent Societies in 186 different countries and over 100 million staff and volunteers, the Movement has a reach like no other organisation.

There is also great scope for these lessons to have benefit *beyond* the Red Cross and Red Crescent Movement. There is a lack of documented experience on adapting to the health effects of climate change and addressing changing risks, especially for humanitarian actors in developing countries.

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