

# HEALTHY FUTURES



## HEALTHY FUTURES

Health, environmental change and adaptive capacity; mapping, examining & anticipating future risks of water-related vector-borne diseases in eastern Africa

Collaborative Project  
Seventh Framework Programme  
Cooperation

*Deliverable D6.14*

***Fourth project update for stakeholders  
December 2014***

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| Short summary       | <p>This Project Update summarises the work that has been carried out during the period March-December 2014 of the HEALTHY FUTURES project, highlighting noteworthy achievements. It is intended to be a short brief, providing readers the means to obtain further information if desired. The update, which commences on page 4 of this document, was disseminated to the stakeholders compiled as part of D6.1 Stakeholder and end-user database.</p> |                       |  |
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## 1. HEALTHY FUTURES at a glance

|                        |   |
|------------------------|---|
| <b>Total Budget</b>    | €4,194,963  |
| <b>EC Contribution</b> | €3,377,998  |
| <b>Duration</b>        | January 2011 – December 2014 (48 months)                  |
| <b>Coordinator</b>     | Trinity College Dublin, Ireland                           |
| <b>Consortium</b>      | 15 partners: 7 Africa-based, 7 Europe-based, 1 Asia-based |

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## 2. HEALTHY FUTURES overview

**HEALTHY FUTURES** (Health, Environmental Change and Adaptive Capacity: mapping, examining & anticipating future risks of water-related vector-borne diseases in eastern Africa) is a FP7-funded project that aims to address the risk of outbreaks and transmission of three water-related vector-borne diseases (VBDs) in eastern Africa: malaria, schistosomiasis and Rift Valley fever (RVF).

Motivated by the knowledge that each year in Africa several million people lose their lives or are severely harmed as a result of avoidable, environment-related diseases, and that the effects of environmental changes on health are generally felt most acutely by the poorest members of society, HEALTHY FUTURES has worked to improve understanding of links between environmental (including climate) effects and three VBDs that have significant human, animal and economic impacts in the East African Community (EAC) region. Improved understanding and increased awareness of links between environmental and societal changes and health can help in the better anticipation and costing of, for example, the health impacts of climate change. An important component of the project has been the development of new, state-of-the-art, computer-based dynamic disease models for the three VBDs targeted by HEALTHY FUTURES. When combined with assessments of vulnerability to infections, outputs from the models can be used to support decisions concerning the deployment of valuable health resources in the region.

The main aims of HEALTHY FUTURES are improved understanding of links between environment and disease, in particular water-related VBDs; the application of this improved understanding to the better anticipation of future environmental (including climate) change effects on VBDs in eastern Africa; and finally the involvement of stakeholders (representatives of human and animal health agencies, both governmental and non-governmental) in developing decision support frameworks (DSFs) that can maximise benefits from improved understanding and a greater awareness of projected future health impacts.

Perhaps the most challenging aspect of the project has been meeting this third aim. To this end, since the project commenced on 1 January 2011, HEALTHY FUTURES has strived to enable access for the intended user community to scientific findings and model output from the research. Engagement with stakeholders in the development of scientific evidence- and local knowledge-based DSFs has been at the forefront of attempts to convert science to practice and to support the decision making processes in the EAC region.

### 3. HEALTHY FUTURES progress (March 2014-December 2014)

- The final partner meeting was hosted by the Interfaculty Department of Geoinformatics (Z\_GIS) at the Paris-Lodron University of Salzburg (PLUS) in Austria from 10-11 September 2014. Discussions on the completion of work packages and remaining deliverables took place in the lead up to the close of the project in December 2014.
- The metadata entry platform (with links to the online project database) has been completed using the free open source software Esri Geoportal Server (version 1.2.2). The HEALTHY FUTURES metadata portal, available at: <http://41.204.190.50/geoportal/catalog/main/home.page>, has now been populated with information relating to disease, environmental (including climate) and relevant socio-economic data generated and collated by members of the HEALTHY FUTURES consortium. Users can view and download all publically accessible data via this site.
- An interactive, web-based mapping and visualisation tool was built using an open-source framework. The HEALTHY FUTURES Atlas (available online at: [http://zgis186.geo.sbg.ac.at/hf\\_atlas](http://zgis186.geo.sbg.ac.at/hf_atlas)) provides access to information on climate change, potentiality of disease occurrence, and population vulnerability for the three targeted VBDs. It can be used to assist decision makers in the East African Community (EAC) study region. The intention is to maintain and further develop this resource, which is an important component of DSFs being developed through HEALTHY FUTURES, beyond the end of the project. In future, the Atlas may extend beyond the EAC region, and include additional environment-related infectious diseases.
- A two day RVF decision makers' meeting was held in Naivasha, Kenya, from 30 September-1 October 2014. The meeting was convened to review the RVF DSF based on research outputs that have been generated by HEALTHY FUTURES and other RVF projects involving the International Livestock Research Institute (ILRI). Participants were also asked to identify and rank factors that might influence the vulnerability of an area to RVF. A total of 25 participants drawn from local and international agencies from across eastern Africa attended the meeting. The meeting report can be found at: [http://www.healthyfutures.eu/images/Stakeholder\\_engagement/RVF\\_stakeholder\\_worksh\\_op/Report\\_of\\_the\\_Rift\\_Valley\\_Fever\\_Decision-Maker\\_Workshop.pdf](http://www.healthyfutures.eu/images/Stakeholder_engagement/RVF_stakeholder_worksh_op/Report_of_the_Rift_Valley_Fever_Decision-Maker_Workshop.pdf)
- Two separate DSFs are currently being established for both schistosomiasis and malaria after a stakeholder engagement workshop was held from 18-20 November 2014 in Nairobi, Kenya. The DSFs for schistosomiasis and malaria, intended to support forward-looking health planning in the EAC region, serve as guides to responses to these two diseases in the face of anticipated environmental changes, especially climate change, over coming years.
- The impact of future land use change (LUC) on malaria transmission in Africa was assessed using state-of-the-art mathematical modelling tools for the Intergovernmental Panel on Climate Change (IPCC)'s low and high end emissions scenarios (RCP2.6 and RCP8.5). In three of the four Earth System models used, the impact of LUC on precipitation and temperature over the next century is limited, resulting in no significant change in malaria transmission. In one model, LUC is more important, leading to more intense malaria transmission over longer seasons in the southeast of the continent, most notably in Mozambique and southern Tanzania.

- A detailed report on the development of three epidemiological models formulated for malaria, schistosomiasis and RVF has been produced. This report describes the integration of each disease model, with driving environmental data provided by an ensemble of climate models. The impacts of projected climate changes on long-term changes in vulnerability to disease and changes in spatial distribution of disease transmission are particular foci of the report.
- Four PhDs funded by HEALTHY FUTURES have been successfully completed or are nearing completion. The PhD research has led to the publication of several papers in high impact, internationally refereed journals, in addition to theses. The titles of the PhD thesis research, the students concerned and the status of the thesis research comprise:
  - ‘Modelling the effects of temperature changes on *Schistosoma mansoni* transmission’ completed by Nicky McCreesh at Durham University. Thesis submitted and successfully defended.
  - ‘Integrated spatial indicators for modeling, exploring and visualising vulnerability to vector-borne diseases’ completed by Michael Hagenlocher at PLUS. Thesis submitted and successfully defended.
  - ‘A simulation model of Rift Valley fever transmission in Kenya’ completed by John Gachohi at the ILRI. Thesis submitted and awaiting examination.
  - ‘Climate change and malaria in Rwanda: Spatial assessment of social vulnerability at different scale levels’ completed by Jean Pierre Bizimana at the University of Rwanda (NUR). First draft of thesis submitted to supervisors. Final draft yet to be submitted or examined.
- HEALTHY FUTURES was featured in a short video along with its sister project QWeCI (also funded by the EC under FP7). The documentary, produced by Africa Turns Green and focusing on the impacts of climate change on health in Africa, highlights how both HEALTHY FUTURES and QWeCI aim to help reduce the future burdens of environment-related VBDs in Africa. The video is available to watch via the HEALTHY FUTURES website ([http://www.healthyfutures.eu/index.php?option=com\\_k2&view=item&layout=item&id=176&Itemid=276&lang=en](http://www.healthyfutures.eu/index.php?option=com_k2&view=item&layout=item&id=176&Itemid=276&lang=en)) and on YouTube (<https://www.youtube.com/watch?v=oYL4Nc-qnKE>).



- A report on the synergies and collaborations between HEALTHY FUTURES and other projects and stakeholders was produced and is available to download from the project website at [http://www.healthyfutures.eu/images/HEALTHY\\_FUTURES\\_D7.5\\_Report\\_on\\_Synergies\\_and\\_Collaborations.pdf](http://www.healthyfutures.eu/images/HEALTHY_FUTURES_D7.5_Report_on_Synergies_and_Collaborations.pdf)

#### 4. Further Information:

- HEALTHY FUTURES will host a session at the 'Impact of Environmental Changes on Infectious Disease' (IECID) conference scheduled to take place from 23-25 March 2015 in Sitges, Spain. The session, titled 'Assessing the health impacts of environmental changes in eastern Africa - spatial modelling tools for integrated risk assessment', is scheduled to take place from 14.00-16.00 on Wednesday 25 March. Dr Adrian Tompkins (ICTP) is the HEALTHY FUTURES contact point for the session. For more information on the session and the IECID conference, please visit [www.iecid2015.com](http://www.iecid2015.com). The Special Issue in the *Geospatial Health Journal*, which was previously planned to be based on the work delivered at the 'Climate Change and Vector Borne Diseases: Past, Present and Futures' conference in Rwanda, will instead be based on the HEALTHY FUTURES sponsored session at IECID.
- The seventh and final issue of the HEALTHY FUTURES Newsletter (December 2014) is currently in production and should be available to download from the project website by 22 December 2014.

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