



## **HEAT INDICATORS FOR GLOBAL HEALTH**

Monitoring, Early Warning Systems and Health Facility Interventions for pregnant and postpartum women, infants and young children and health workers

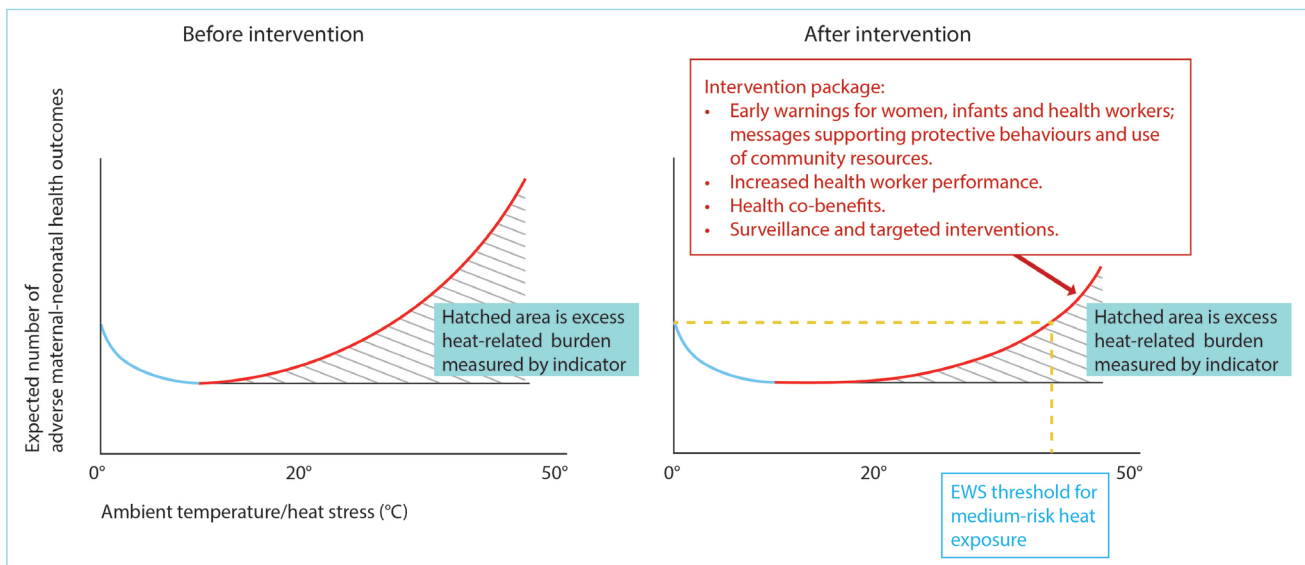


## PROJECT SUMMARY

The HIGH Horizons project addresses key knowledge gaps around the quantification and monitoring of direct and indirect impacts of heat exposure on maternal, newborn and child health. Pregnant women, infants and health workers serve as sentinel populations for tracking climate change impacts, adaptations and co-benefits. Protecting these vulnerable populations is critical and ensures a healthy future for the next generations.

With heat adaptation interventions such as modifications to health facilities (e.g. passive cooling systems, reflective white paint on the roofs,...) and effective messaging through smartphones to accompany heat stress notifications to pregnant and postpartum women and mothers of infants, the burden of adverse health outcomes may be reduced as depicted in the below graph where the area under the curve represents the number of potential adverse health outcomes on pregnant women, infants and health workers.

### Flatten the curve of heat-related health burden



The HIGH Horizons project includes 11 partners across 10 countries in Europe and Africa and encompasses activities in both the European Union (EU) and sub-Saharan Africa. Jointly the HIGH Horizons partners will quantify and monitor direct and indirect health impacts of extreme heat; test a personalised Early Warning System (EWS); and implement integrated adaptation-mitigation actions in health facilities.

## IMPROVING MATERNAL AND CHILD HEALTH OUTCOMES

Using systematic reviews, analyses of heat impacts on maternal, newborn and child health outcomes, and data science predictive modelling on maternal and newborn health data from Sweden, Italy, Greece, Kenya and South Africa, the HIGH Horizons partners will:

- increase our understanding of the relationships between heat and maternal, newborn and child health outcomes
- inform testing and selection of global, EU and national indicators as well as cut-off thresholds for the EWS, stratified by risk groups.

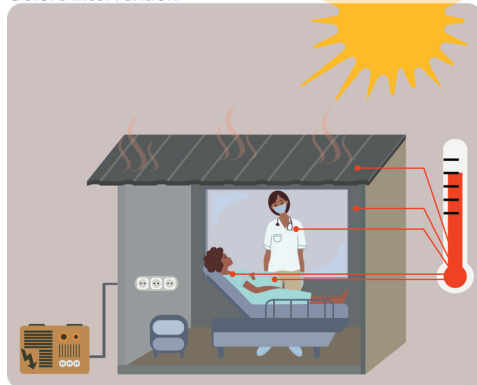
Specific biomarkers are measured among pregnant women and their infants in a prospective mother-child birth cohort in Greece to better understand the role of heat exposures on adverse health effects. Through a smartphone app (ClimApp-MCH), this EWS delivers notifications and setting-specific messages, co-designed locally. The app will be evaluated among 600 mothers and infants in Sweden, South Africa and Zimbabwe, from pregnancy through 12 months of infant age.

## PROTECTING HEALTH WORKERS AND IMPROVING HEALTH FACILITIES

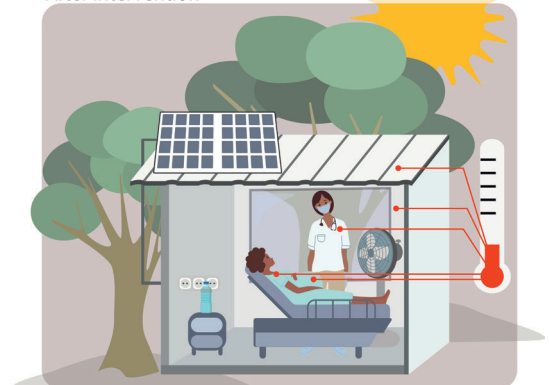
The HIGH Horizons project will document the impact of heat exposure on health worker wellbeing, health, productivity and on the quality of care provided. Modifications to health facilities are co-designed and modelled to reduce heat exposure for health workers and to limit facility-generated carbon emissions. Health worker outcomes and facility emissions are compared before and after the mitigation and adaptation interventions of which the cost-effectiveness is evaluated.

HIGH Horizons Health Facility Adaptation & Mitigation

Before intervention



After intervention



## SHAPING POLICY

Throughout HIGH Horizons partners will engage relevant stakeholders to conduct the research and to disseminate the project findings, prioritising country partners, EU, African and global policy makers.

## OBJECTIVES

The HIGH Horizons project has five specific objectives:

1. Investigate the biological and thermal physiological pathways from heat effects on adverse health outcomes among pregnant women and their infants in the first year of life;
2. Identify and select suitable indicators for quantifying and monitoring the global, EU and national-level health impacts of extreme heat among pregnant and postpartum women, newborns and infants;
3. Develop and test an Early Warning System using a smartphone app to provide individualized heat stress notifications, and locally adapted messaging for protecting pregnant and postpartum women, infants and health workers;
4. Identify cost-effective, integrated adaptation-mitigation interventions to alleviate heat impacts on health workers, and to reduce carbon emissions associated with health care;
5. Support global and EU climate policies and activities on the monitoring of direct and indirect impacts of climate change on health, and the strengthening of Early Warning Systems through guidance documents, and risk assessment and cost-benefit analysis tools.

These five objectives are addressed in the work packages around assessment, design, implementation and evaluation, and in the cross-cutting work packages for project management and dissemination and communication.



## PROJECT INFORMATION

HIGH Horizons is funded by the EU's Horizon Research and Innovation programme (9.255.941,25 €), grant agreement number 101057843.

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The project runs from 1 September 2022 till 31 August 2026.



## PROJECT CONSORTIUM



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