

# Utility, value and limitations of malaria risk maps in malaria control and elimination: perceptions of decision-makers in Kenya and Malawi

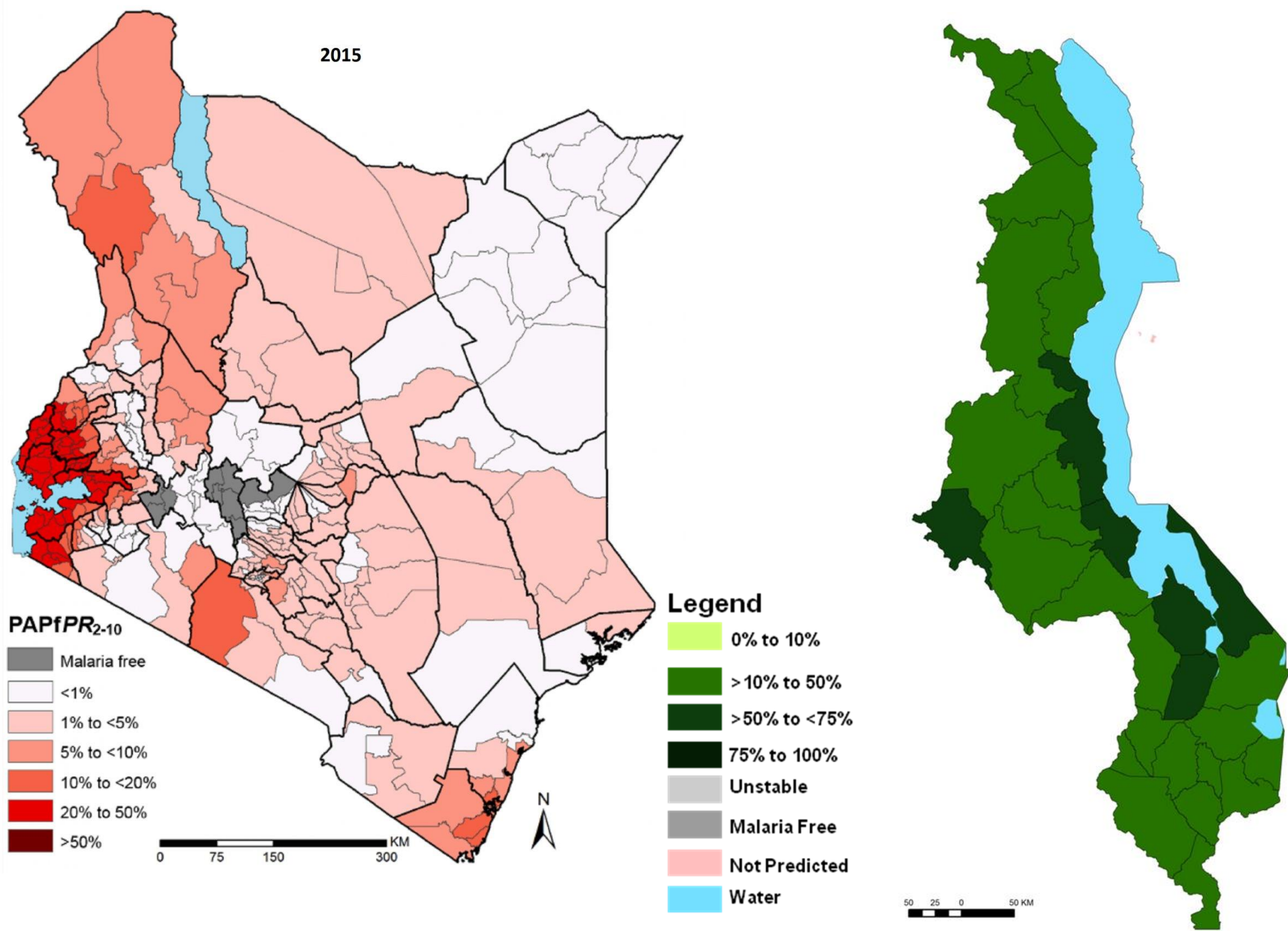


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**Background**  
In the last decade, declining malaria prevalence, reduced external funding, and an upsurge in insecticide resistance have increased the need for efficiency in malaria control in sub-Saharan Africa (SSA). **Modelled Plasmodium falciparum parasite rate (PfPR) maps** have replaced qualitative and eco-climatic risk maps and provide an accurate picture of the epidemiological situation of countries. It was assumed that the use of these prevalence maps would allow prioritising and targeting of interventions and, consequently, a better allocation of resources in malaria control. We test this assumption based on the perspectives of national level decision-makers in four countries of SSA.



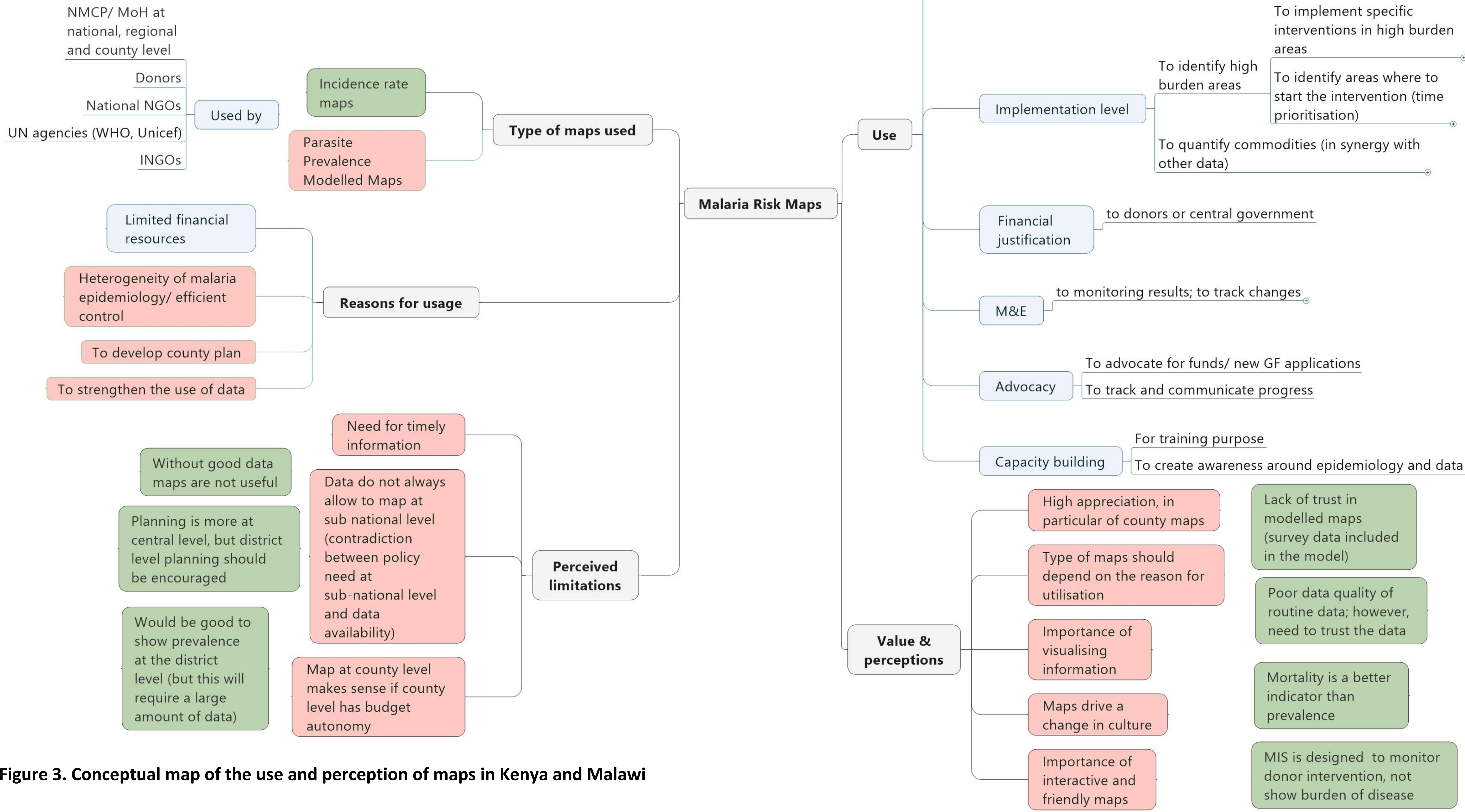
**Figure 1** Kenya population adjusted malaria prevalence PAPfPR2-10 at 1 x 1 km spatial by sub-county - 2015

**Figure 2** Malawi population weighted *P. falciparum* prevalence (%) per health district- 2010

**Objective**  
To explore the utilisation and the perception of the malaria risk maps in targeting and prioritising malaria control interventions by National Malaria Control Programme (NMCP) coordinators and other major stakeholders including the Malaria Interagency Coordinating Committee (MICC) and Technical Working Groups (TWGs) in Kenya and Malawi.

**Methods**  
A narrative synthesis was conducted from a review of policy documents and empirical interviews with stakeholders in Kenya and Malawi. The document review focused on the type and use of epidemiological maps included in the latest policy documents. In-depth interviews explored the drivers of stakeholder perceptions of the utility, value and limitations of malaria prevalence maps, within their role and experience of decision-making, and the national malaria epidemiological context. Approximately 20 interviews were conducted in each country.

## Findings from stakeholder interviews



**Figure 3.** Conceptual map of the use and perception of maps in Kenya and Malawi

## Findings from policy documents review

	Most recent National Malaria Strategy	Type of risk map	Use of the map to prioritise or target interventions
Kenya	NMS 2009-2018- Revised in 2014	Sub-county level modelled PfPR maps at county and national level (2010)	To target high burden areas where delivering universal coverage of nets (LLINs), ITPt and IRS
Malawi	NMS 2017-2022	Incidence (cases per 1,000 population) by region based in routine data (HMIS 2011-2013-2014-2015)	To identify high burden regions where to implement IRS

**Figure 4.** Results from the document review

Modelled PfPR maps in Kenya and HIS incidence maps in Malawi were used in similar ways by policy makers and implementers. Risk maps were used to target interventions (LLINs & IPTp) to higher transmission counties in Kenya, but not in Malawi due to relatively homogenous transmission. Targeting of IRS was conducted in both countries.

**Conclusion**  
The perceived utility of PfPR modeled maps was based upon the presence of epidemiological strata in the country and the perceived quality of data included in the model. Prioritisation and targeting of interventions depends upon the existence of pre-intervention epidemiological strata and the cost of interventions . Whilst there were perceived limitations to the quality of data used for both PfPR modelled maps and incidence maps, stakeholders agreed upon the need for county/district level data, which were provided by PfPR maps in Kenya.