# Workstream one

## Enhancing the Impact of Core Interventions

## Three Sessions

# WS1 Session 1: Joint Task Teams 1 and 2

## Using data for the optimal selection of IRS and ITNs - National Malaria Program and donor experience and considerations

**Presenters:**

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- **Lilia Gerberg**, *USAID/PMI*
- **Kate Kolaczinski, Htin Kyaw Thu,** *Global Fund*

# Malawi presentation on use of data to deploy vector control interventions

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## Malawi Context

| Key Indicators | Baseline | Most recent | Change |
|---|---|---|---|
| Prevalence | 24% (2016) | 10.5% (2021) | 13.5% |
| Mortality | 23/1000 (2016) | 12/1000 (2021) | 11/1000 |
| Incidence | 385/1000 (2020) | 361/1000 (2021) | 24/1000 |

**Main vectors:**

*Anopheles funestus*: most predominant and important in terms abundance, geographical distribution and *Pf* sporozoite infections.

*An. gambiae s.l.* (largely *An. arabiensis*)

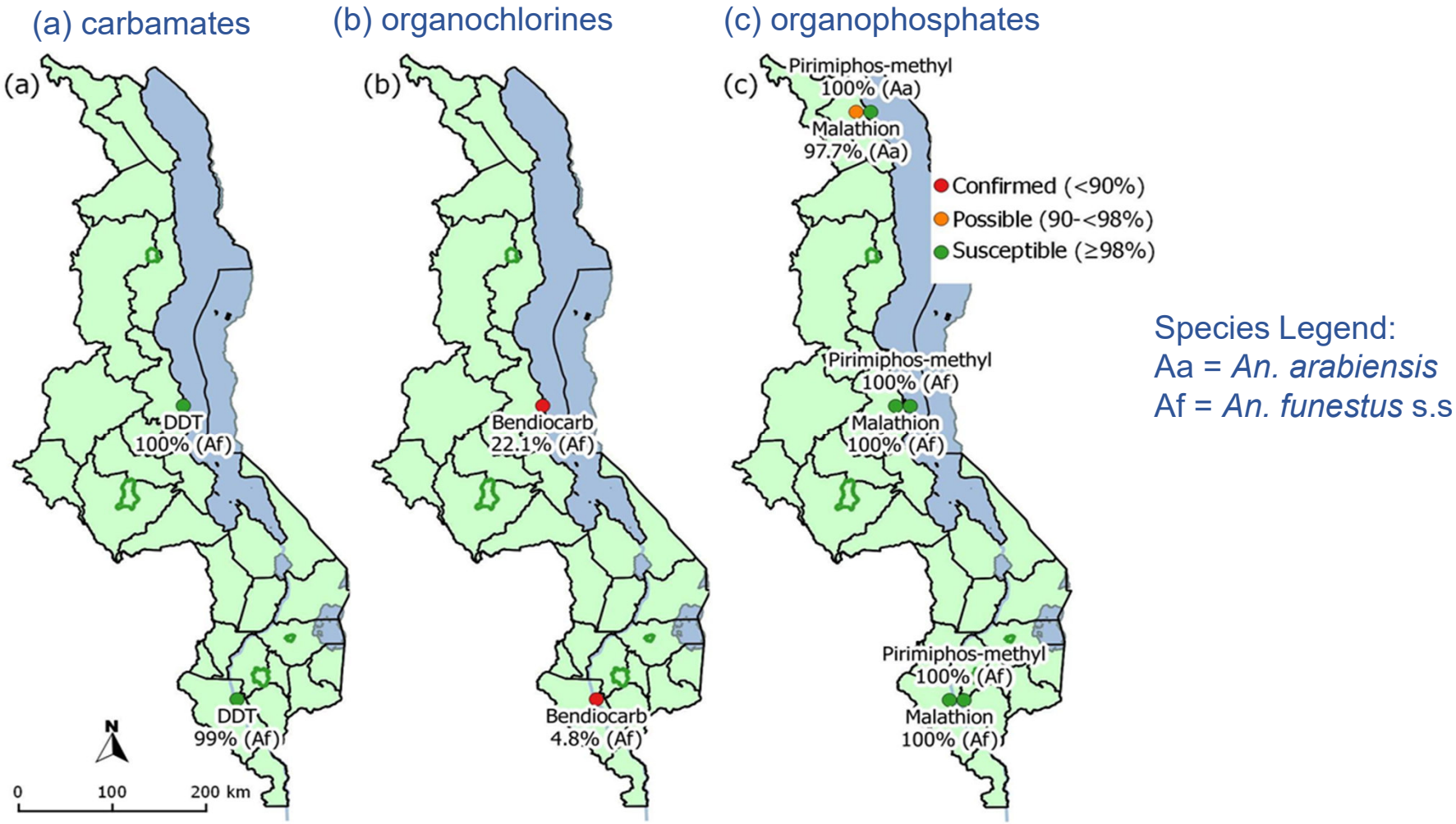
**Policy & Guidance documents**

National Malaria Strategic Plan available

Integrated Vector Control Strategy available

Insecticides Resistance Management Plan (IRMP) (2020-2024) available

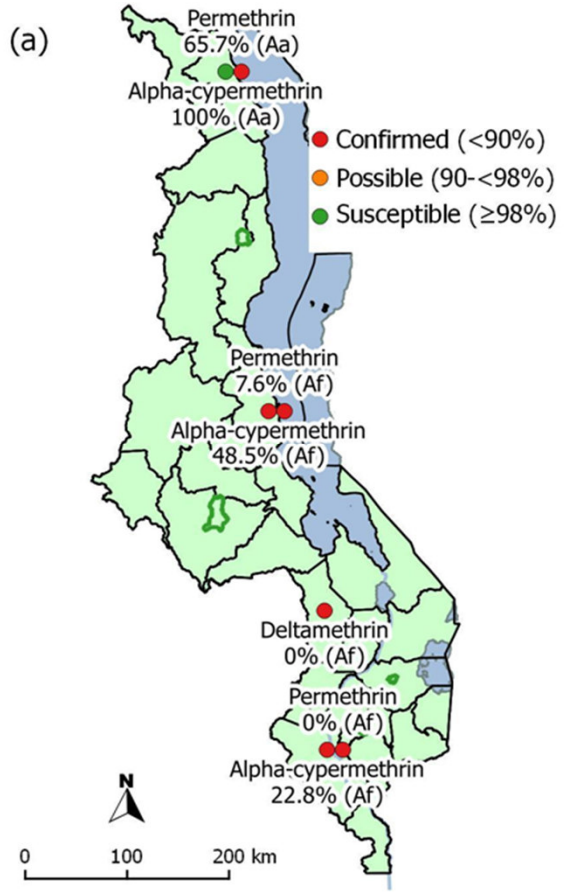
# Distribution of Insecticides resistance (2017-2018)



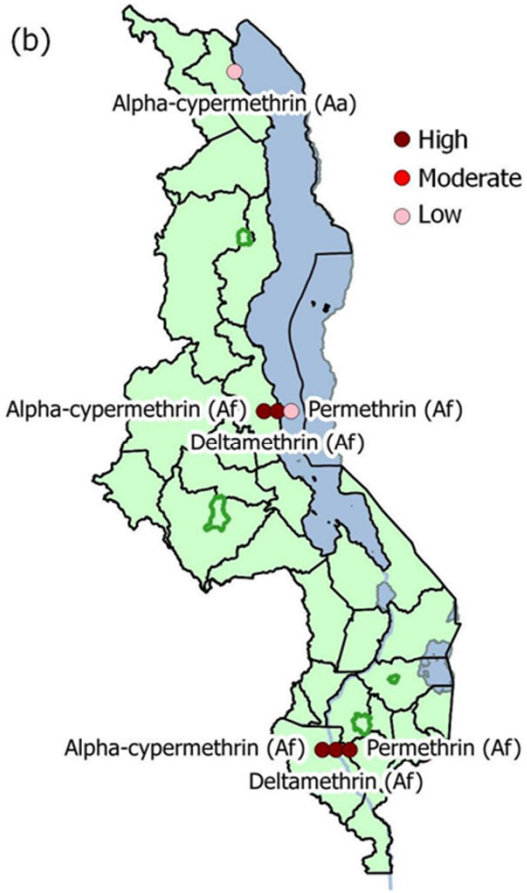

Species Legend:
Aa = *An. arabiensis*
Af = *An. funestus* s.s

# Widespread pyrethroid resistance (2017-2018)

(a) phenotypic resistance frequency




(b) intensity of resistance

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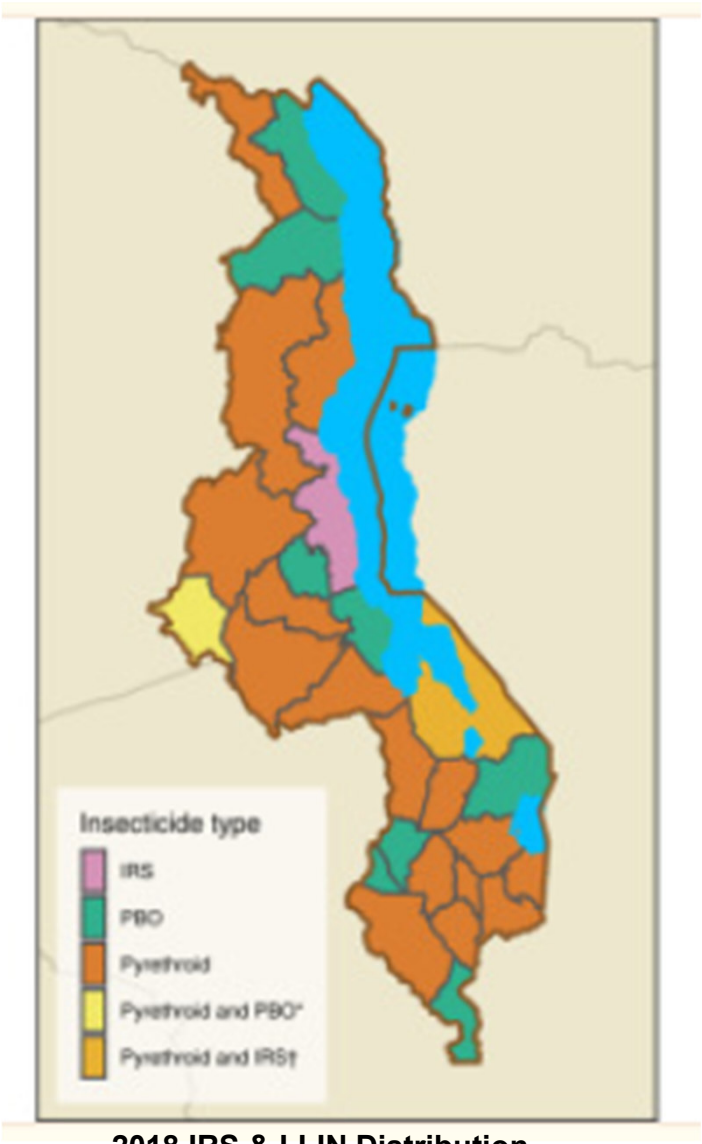
# Evidence Based Deployment of PBOs

Through entomological monitoring, the deployment of PBO LLINs was evidence based, on the existence of enzyme-mediated resistance.

- Pyrethroid resistant *An. funestus* mosquitoes collected from Chikwawa and Nkhotakota districts were pre-exposed to PBO and thereafter to pyrethroids.

- A high level of susceptibility was observed, confirming presence of enzyme-mediated resistance and that PBO LLINs were potentially effective against *An. funestus* in Malawi.




**2018 IRS & LLIN Distribution**

# LLINs & IRS Deployment

Due to wide spread pyrethroid resistance & effectiveness of PBO in restoring susceptibility, the NMCP decided to deploy PBO nets in 2018 Mass Net Distribution Campaign

However, resources were limited.

2018 Mass Net Distribution Campaign deployment:

- 2 million PBO LLINs
- 9 million standard pyrethroid LLINs

IRS:

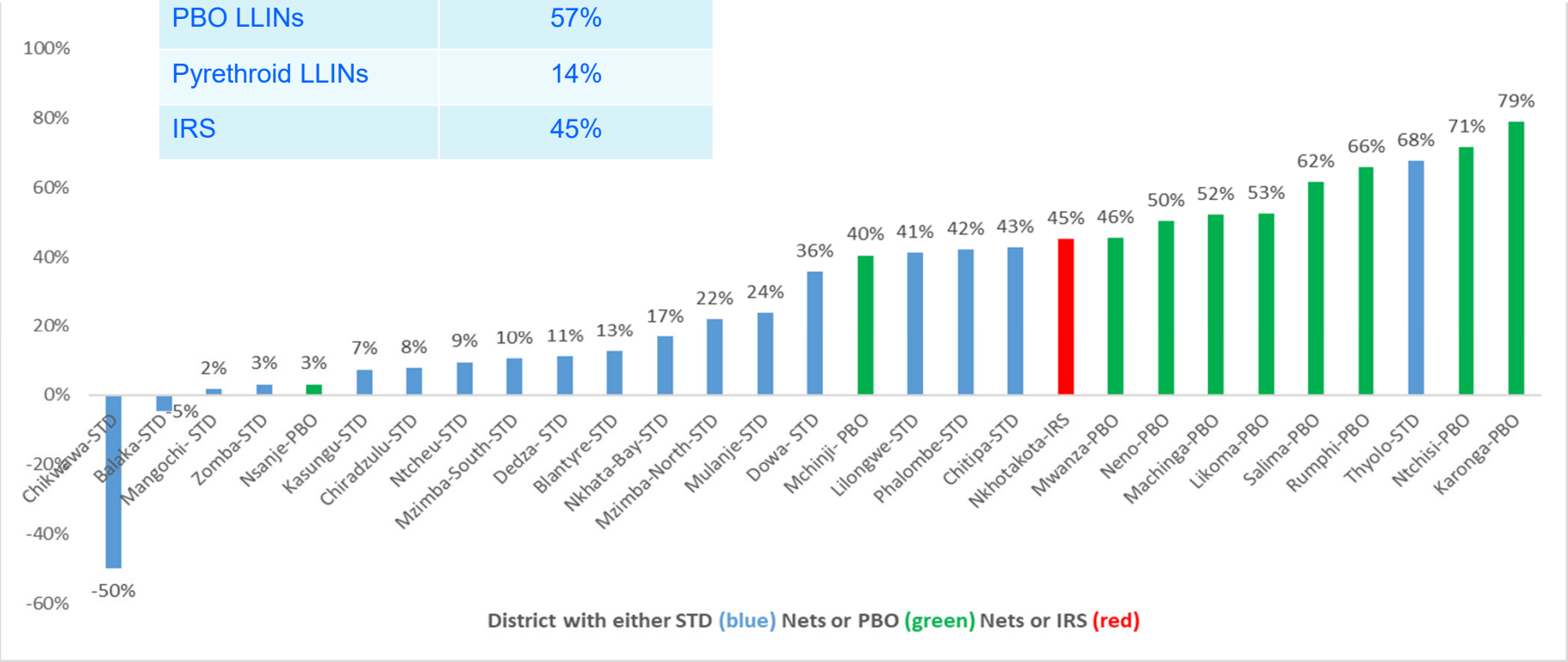
- Actellic 300CS (Pirimiphos-methyl)
- 112,264 structures sprayed

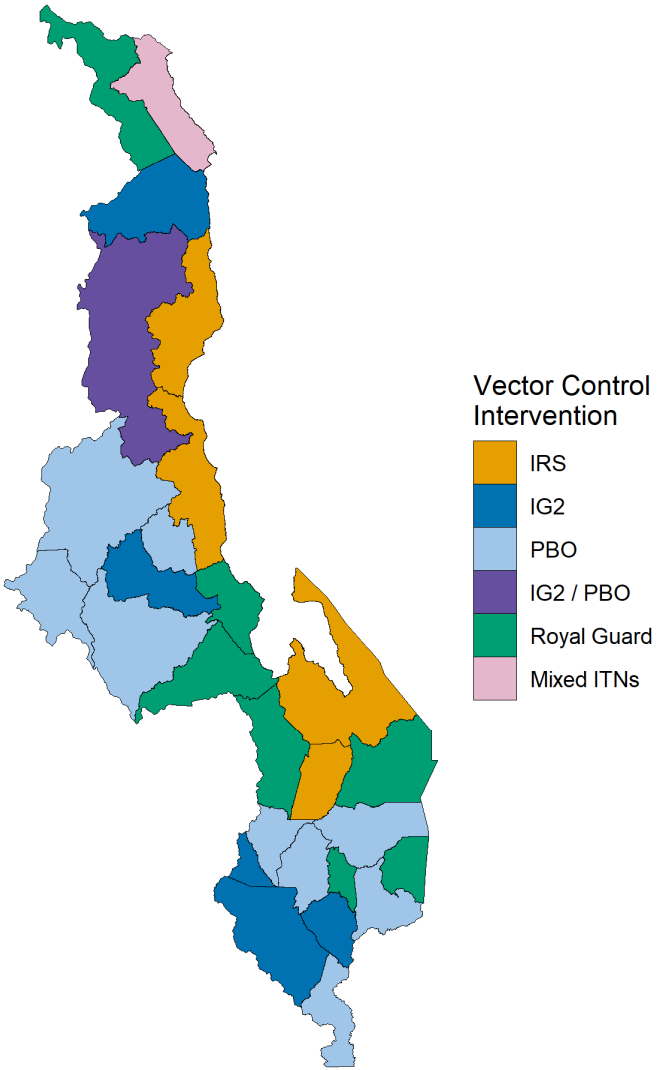
2016-2017 malaria case incidence was used to prioritize districts for LLIN distribution & IRS

**Map: Topazian HM, Gumbo A, Brandt K, et al. Effectiveness of a national mass distribution campaign of long-lasting insecticide-treated nets and indoor residual spraying on clinical malaria in Malawi, 2018-2020. *BMJ Glob Health.* 2021;6(5):e005447. doi:10.1136/bmjgh-2021-005447**

# Percentage reduction in malaria cases, by district Pre (Jan-Dec 2018) vs. Post (Jan-Dec 2019) LLIN & IRS campaign

| Intervention | % Change |
|---|---|
| PBO LLINs | 57% |
| Pyrethroid LLINs | 14% |
| IRS | 45% |





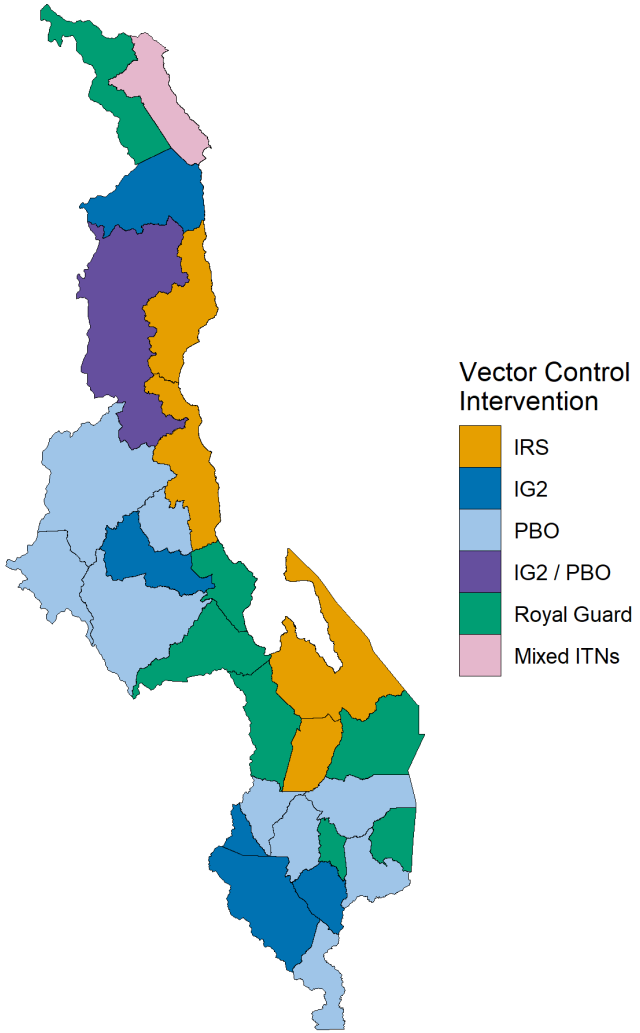

# Mass Net Distribution Campaign (2021)

- Based on entomological evidence and epidemiological concurrence, the NMCP decided to discontinue deployment of standard pyrethroid LLINs.
- NMCP planned for PBO nets, but funding was limited
- New Nets Project (IVCC) collaboration allowed Malawi to deploy dual-active ingredient nets (Interceptor G2 and Royal Guard) on a pilot basis for evaluation.
- Though the deployment of the less known ‘next generation’ nets was a huge risk, such a risk was still better than deploying pyrethroid treated LLINs for which resistance was well documented in Malawi.
- Evaluation underway to determine impact of each intervention using HMIS data.

# Indoor Residual Spraying (2018-2021)

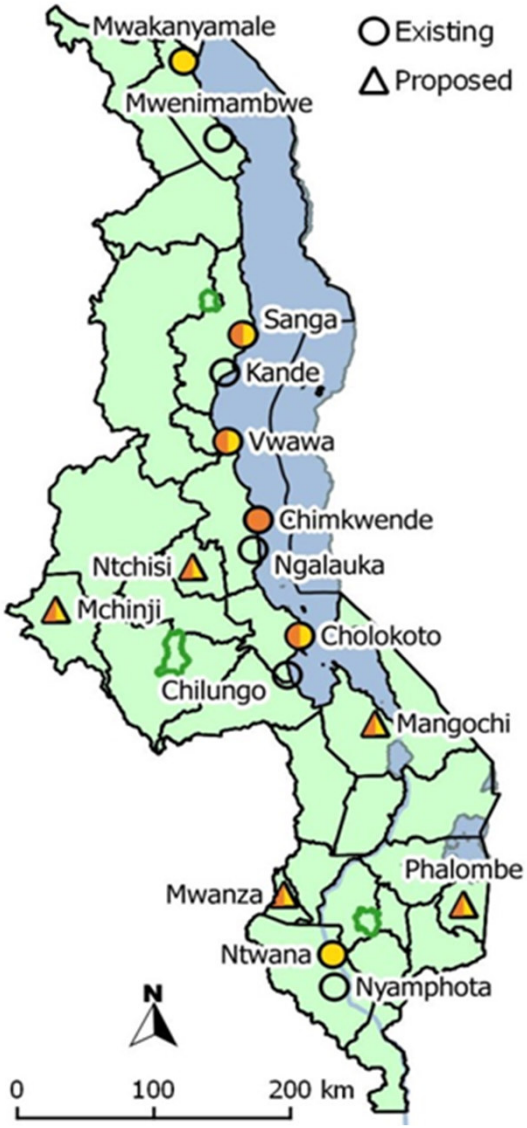
Pyrethroids are not used for IRS

IRS expanded from one to four districts, guided by high malaria incidence in those districts and entomological data on the choice of insecticides to use.




**2021 IRS & LLIN Distribution**

| Year | Nkhotakota | Mangochi* | Balaka | Nkhata Bay |
|---|---|---|---|---|
| 2018 | Pirimiphos-methyl | - | - | - |
| 2019 | Pirimiphos-methyl | Pirimiphos-methyl | - | - |
| 2020 | Clothianidin | Clothianidin | Clothianidin | Clothianidin |
| 2021 | Clothianidin+deltamethrin | Clothianidin+deltamethrin | Clothianidin+deltamethrin | Clothianidin+deltamethrin |
| 2022 | Pirimiphos-methyl | Pirimiphos-methyl | Pirimiphos-methyl | Pirimiphos-methyl |




# Entomological surveillance sites

- With support from PMI, we currently have 13 sentinel sites for entomological monitoring, with plans for expansion.
- We always try to collate the entomologic data with epidemiologic data from the DHIS2.

# Summary

- Policy guidance in place to support national vector control decision-making
- LLIN & IRS deployment informed by entomological and epidemiological data
- Use of routine data to evaluate the impact of new products
- Ongoing expansion of entomological surveillance to strengthen vector control decision-making

Thank you