



The Alliance for
Malaria Prevention

Waste management review and prioritized recommendations

AMP TA Team Call – June 6, 2024



Background

- [3B nets delivered](#) to malaria-endemic countries since 2004 (Oct 23)
- Significant amount of plastic generated through ITN packaging and inactive/unserviceable nets
- Increasing questions from programmes about what guidance exists for waste management and for end of life (EOL) nets



Waste generated in Namacurra district, Zambézia Province. Photo: Programa Nacional de Controlo da Malária/ Direcção Provincial de Saúde, Tete

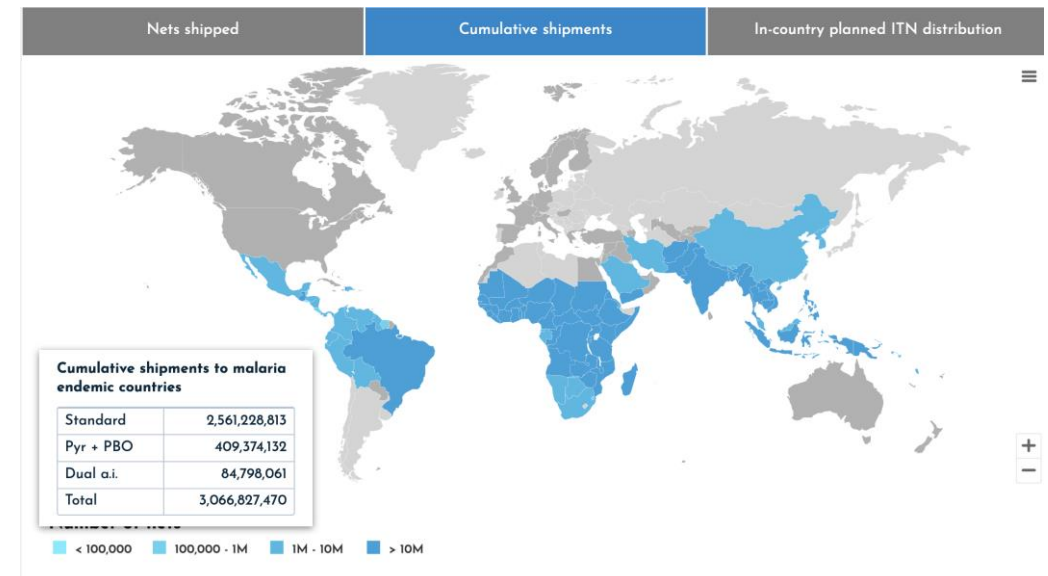
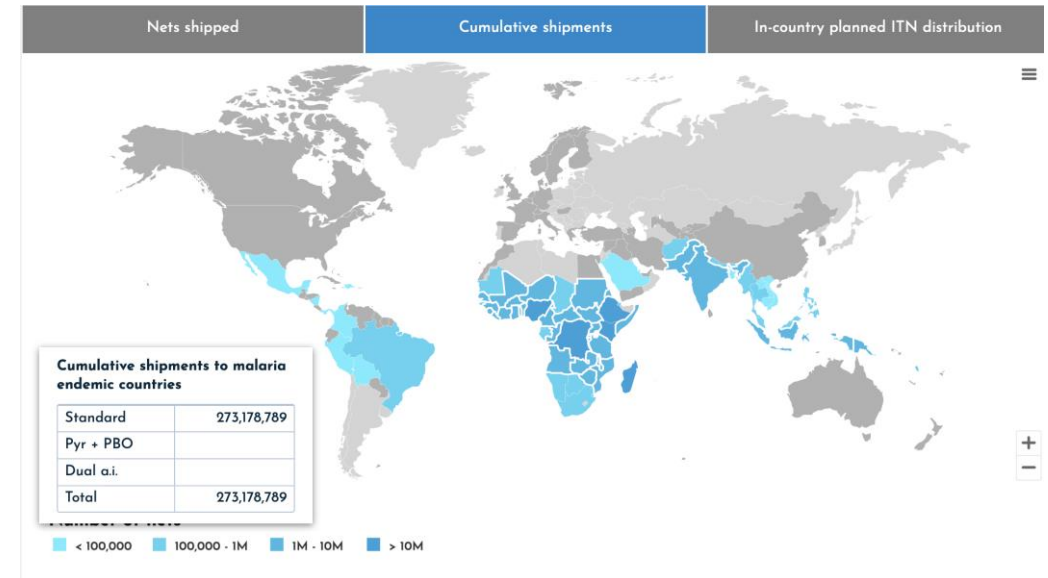
Concerns from programs and partners

Concerns related to management of waste from ITNs, i.e. plastic packages, baling materials and end of life (EOL) ITNs, include:

- Increased scale of ITN campaign distributions with universal coverage quantification (versus at-risk population)
- Few available/on the market alternative ITN packaging options
- Limited national and sub-national waste management capacity for effective and efficient waste management (plastics, baling, strapping, etc.)
- Technical guidance from WHO for management of ITN waste that is difficult to implement
- Lack of guidance, policies and procedures on ITN management throughout their life cycle
- Limited options for retrieval, storage and final disposal of unserviceable or EOL nets

- 10 years ago, WHO estimated that with plastic consumption increasing substantially in line with economic development on the continent, “ITNs and their packaging currently account for one to five per cent of total plastic consumption in Africa”

- Procurement and delivery of ITNs is increasing year on year since the Net Mapping Project began
 - 10 years to 1B
 - 5 years to 2B
 - 3 – 4 years to 3B



WHOPES – no longer exists but current guidance (2012)

Packaging requirements for LNs:

- Tender documents should also specify the packaging type, thickness of materials used (where appropriate), size and durability to suit the local use and climatic conditions. The packaging should also comply with United Nations recommendations for the transport of dangerous goods.
- While purchasing pesticides in bulk may be more economical, this practice should be weighed against the risks of spillage, inaccurate dosing and exposure of pesticide applicators and handlers during field application.
- LNs should be packed individually in sealed plastic bags that are sufficiently strong to prevent damage during transit. The label statements specified below should be printed on the bag or inserted in a transparent plastic bag inside the bag.
- The bale should have a secondary outer packaging that protects the LNs and should be properly strapped (minimum of four straps) and labelled.
- Tenderers should be required to provide evidence that the packaging will be in accordance with national requirements. In the absence of such standards, they should provide evidence that the packaging will be sufficiently robust to preclude leakage and breakage during shipment and local transport.
- The labelling requirements should also be in line with the International Code of Conduct on the Distribution and Use of Pesticides and the FAO guidelines on Labelling of Pesticides.

https://iris.who.int/bitstream/handle/10665/44856/9789241503426_eng.pdf?sequence=1

WHO Recommendations on the Sound Management of Packaging for Long-Lasting Insecticidal Nets (2011)

Do not:

- ✗ Encourage the reuse of ITN bags for any other purpose to avoid the risk of pesticide poisoning
- ✗ Dispose of ITN packaging as ordinary waste or in improper landfills

Do:

- ✓ Ensure that workers use proper personal protective equipment during all stages of operations for collecting, sorting, recycling and disposing of ITN packaging.
- ✓ Incinerate ITN bags and baling material only if specified high-temperature incineration conditions for pesticide-tainted plastic can be guaranteed, and if Food and Agricultural Organization (FAO)/WHO and Basel Convention guidelines, as well as national regulations and requirements, can be strictly followed.
- ✓ Store used ITN packaging to be recycled or disposed of in dry, ventilated and secure facilities.
- ✓ Consider recycling ITN packaging.

ITN campaigns

Campaigns:

- National malaria programmes began requesting “naked” or bulk packaged nets for campaign distribution to minimize the significant volume of waste generated over a short period of time
 - WHO policy on packaging for insecticide tainted materials had not changed, but decisions to minimize the waste generated through campaigns were supported by funding partners
- The shift to bulk packaging was seen as a feasible option for campaign distribution given *a short storage period between delivery in country and distribution to households*
 - The start of the shift to bulk packaging for ITN campaigns aligned, in many countries, with increasing restrictions on plastic importation
- It is important to note that in certain contexts, individual packages may still be requested for mass campaign nets if it is unsure that ITNs can be distributed according to the timelines (e.g. in contexts of insecurity where ITNs may be in storage longer) or for other reasons

ITN continuous distribution

- Waste management challenges for ITN mass campaigns are significantly different from those for continuous distribution (including routine, community and school distribution)
- Waste is generated continually but in smaller volumes
- Most CD ITNs are procured with individual packaging given a longer storage period between arrival in country and distribution to household and *a lack of sufficient information about ITN performance or quality issues related to storage without packaging*
- Millions of individually packaged ITNs being distributed annually through both campaign and non-campaign channels



School pupils displaying ITNs. Photo: Jeffrey Buta

Challenges identified in complying with waste management good practice

1. The current WHO guidance does not clearly describe when and where individual or bulk packaging is appropriate.
2. Knowledge of the WHO guidelines for management of ITN waste is high, but correct implementation of the recommendations is low due to various factors, particularly lack of infrastructure for high-temperature incineration.
3. There is a general misunderstanding of the types of packaging available for ITNs. While no biodegradable packaging options currently exist from ITN manufacturers, some respondents participating in the online survey indicated receiving this type of packaging.
4. Waste management plans and budgets are not consistently developed and implemented for any of the ITN distribution channels. Where they are developed, their implementation is limited by the availability of funds to operationalize the various steps and the infrastructure for incineration or recycling.
5. Individual ITN packages are generally either retained at the point of distribution for destruction or they are sent to households with the ITN recipient. A granular understanding of how ITN packages are being used and managed (vis-à-vis guidance provided by the national malaria programme) at the point of distribution and/or at households is not available and household level waste management guidance is a gap in almost all countries.
6. There is a need for improved and focused engagement and coordination with in-country private sector partners to better understand the options for incineration, recycling, etc. and whether these meet national and global standards.

Menti and discussion

Wrap up: Considerations for waste management

Avoid waste generation: ITN packaging waste is generated through distribution of ITNs through all channels, but mass ITN campaign distribution, typically targeting millions of households over a short period of time, generates a large amount of waste in a short period if bulk packaging is not specified.

Ensure ITN individual packages are not reused by households: Waste generated through ITN distribution, whether the ITNs are packed in bales and/or are individually packaged, contains insecticide.

- WHO advises that it should not be repurposed or reused at household level
- National malaria programmes and implementing partners should provide messaging to households that individual bags provided with ITNs should not be reused by households other than to referring to the use and care instructions

Follow national policies and engage relevant authorities: Most countries have developed environmental protection (including waste management) policies, particularly policies pertaining to used pesticide containers, that are enforced by their environmental regulatory authorities. These government departments should be looked to as a primary source of information for companies and locations for plastic recycling and/or incineration for ITN plastic packages and baling waste. Waste management is a cross-sectoral issue.

Ensure standards required are met for private sector options: Should private sector incineration or recycling be chosen, the selected company should be assessed for adherence to government regulations in terms of employee and environmental health and safety practices, as well as the types of plastic they can recycle, including whether they can separate ITN-related plastic from other plastic to avoid contamination by insecticides. Incineration options should verify capacity to reach high temperature burning required for insecticide-tainted materials.

- **Ensure proper local management of waste where it is the only option:** If neither recycling nor incineration methods are feasible, then national programmes should consider whether to bury the waste generated at each distribution point or whether to gather all waste for management at a higher administrative level. Where burying is the only option for ITN waste, it should follow WHO guidance.

Key messages

- For countries procuring Dual AI ITNs, it's important to have **concrete information about packaging in advance**
 - For Dual AI nets, possible no option for bulk packaging → CONFIRM!
- **Planning – concrete – needs to start early**
 - Start exploring options at time of procurement not at time of campaign macroplanning
 - Understand processes required to avoid delays
 - Ensuring budgeting is aligned to plans
- **Standard operating procedures, training, etc.**
 - No matter what the final option is for waste disposal, ensure that people know how to implement it and that the implementation is supervised and monitored

Next steps – We will feedback based on your inputs during the next call!



Thank you

Expanding the ownership and use of mosquito nets

Prioritized recommendations

Recommendation	Funding partner	Operational partner	Country programme	Manu- facturers
<p>Establish a coordinating body of multi-sectoral partners and stakeholders with an interest/expertise in waste management to:</p> <p>(1) Ensure cross-sector and cross-organization coordination on initiatives and set up an information-sharing platform (or contribute to an existing platform)</p> <p>(2) Further define and refine priorities for ITN waste management and identify responsible partners (depending on coordinating body, focus may be expanded to vector control tools more broadly)</p> <p>(3) Identify outstanding gaps in information and data needed to support technical guidance update through WHO</p> <p>(4) Advocate for “sustainable manufacturing practices that include ecological, economical and safe waste management”¹⁶</p>	✓	✓	✓	✓

Establish a clear understanding of the purpose of the individual bag for different distribution channels (e.g. to convey instructions for use and care, to protect the ITN from damage, to preserve the claimed shelf-life while the ITN is in storage within the supply chain) and from different stakeholders (e.g. national programmes, manufacturers, funders, etc.) to ensure concerns are addressed in relation to packaging and alternatives.	✓	✓	✓	✓
Consult with ITN manufacturers about: <ul style="list-style-type: none"> • Product stability when stored without a package or with an alternative packaging <u>material</u> • Alternatives for non-plastic packaging or reusable transport packaging, particularly for baling materials • Volume pricing and costs for alternative options (packaging and baling) 	✓	✓	✓	✓

Support improved cross-sectoral collaboration led by national malaria programmes at country level, including engagement with government structures overseeing climate, <u>environment</u> and waste management, to ensure short-term adherence to existing guidelines and medium- and long-term plans for integrated waste management at household and community level.	✓	✓	✓	✓
Improve granular understanding of how current national malaria programme policies for ITN waste management are being implemented for different distribution channels; based on results, reinforce what is working and correct where there are gaps for effective waste management; update policies and materials as needed in line with the evolving context for waste management (e.g. investments through C19RM).	✓	✓	✓	

Map (or update existing mapping) the current ITN waste management chain in select countries, including planning, <u>budgeting</u> and execution to provide additional insight into gaps and needs for different stakeholders.	✓	✓	✓	
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Collect information and develop case studies highlighting best practices and innovations with ITN waste management.		✓	✓	✓
Develop guidelines and tools to support: <ul style="list-style-type: none"> ● Assessment of capabilities of local recycling companies to manage pesticide-tainted materials/plastics, as well as the volume of plastic waste that will be generated. A full assessment should be done by the responsible government <u>department</u> ● Household level waste management of individual packaging (as needed, primarily for CD channels) ● Feasible waste management plans and associated budgets based on potential country <u>options</u> ● Social and behaviour change (SBC) planning and message development for both campaign and CD channels to raise the profile on waste management and implications at household and community <u>level</u> ● Utilization of the digital transformation happening in the distribution of ITNs to track waste collection and management 		✓	✓	

Thank you! Merci! Gracias!
Asante sana!

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