

# REACH

Ending Child Hunger and Undernutrition

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## Acting at Scale: Intervention Guide

Deworming

February 2009

# Context

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## **The following document is part of the REACH *Acting at Scale* set of materials**

- The documents' aim is to provide highly condensed information and lessons learned for scaling up REACH-promoted interventions to support field practitioners and other interested parties
- They are intended to become a living set of materials, updated periodically by the REACH Global Interagency Team
- These materials are a first step towards a larger REACH Knowledge Sharing service, which will be developed over time

## **The full set of *Acting at Scale* materials includes**

- *An Intervention Summary*
  - An overview document containing key facts for all of the 11 promoted interventions
- *Intervention Guides* for each of the interventions<sup>1</sup>
  - Containing rationale, lessons learned, costs and further resource lists
- *Implementation Case Studies* for each of the interventions<sup>1</sup>
  - Initial set of details and lessons learned from programs implemented at scale
- *Resource Lists*
  - Lists of key documents, organizations and programs at scale
  - Included at the back of each *Intervention Guide* and in Excel spreadsheets available from the REACH Global Interagency Team

## **These materials represent a preliminary version, to be validated and refined via additional consultations**

- Prepared in Summer 2008 by the REACH Global Interagency Team, based on inputs from 56 practitioners and experts, as well as extensive desk research
- A revised Version 2 of these documents will be released in late 2008 or early 2009, incorporating feedback from initial recipients

## **If you have questions or feedback on these materials, please**

- Contact your local REACH facilitator in Lao or Mauritania, or
- Contact the REACH Interagency Team Coordinator, Denise Costa-Coitinho, at [Denise.CostaCoitinho@wfp.org](mailto:Denise.CostaCoitinho@wfp.org)

1. Breastfeeding and complementary feeding have been combined into a single document due to strong linkage in delivery

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- Experts (*under construction*)
- Scaled-up programs

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## Key messages

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### **Worms affect 2 billion people worldwide, generating 4.6M DALYs each year**

- 386M <5 children are at risk of morbidity as of 2007, with only 10.7% covered
- Worms deprive children of iron, vitamin A and other nutrients, creating under- and malnutrition that results in growth faltering, reduced learning capability and anemia

### **Deworming tablets offer a relatively simple solution to this large-scale health problem**

- Highly effective, easy-to-distribute and inexpensive technology
- Low technology and limited adverse events risk enables delivery via staff that require only minimal training

### **Deworming is relatively simple to integrate into existing delivery channels, often with additive value to existing programs**

- Given immediate, visible impact on children, deworming generates demand for other nutrition services
- Can be added to vitamin A, immunization, child health or other mass campaigns, or integrated management of childhood illness (IMCI) public health programs
- Programs for <5s and P&L women can be added as an extension to school feeding programs
  - Schools are the most common delivery channel, given the high exposure rates of school-aged children

### **Given safety of drugs and high probability of individual infection where prevalence rates are high, all children and P&L women should be treated**

- No testing is required

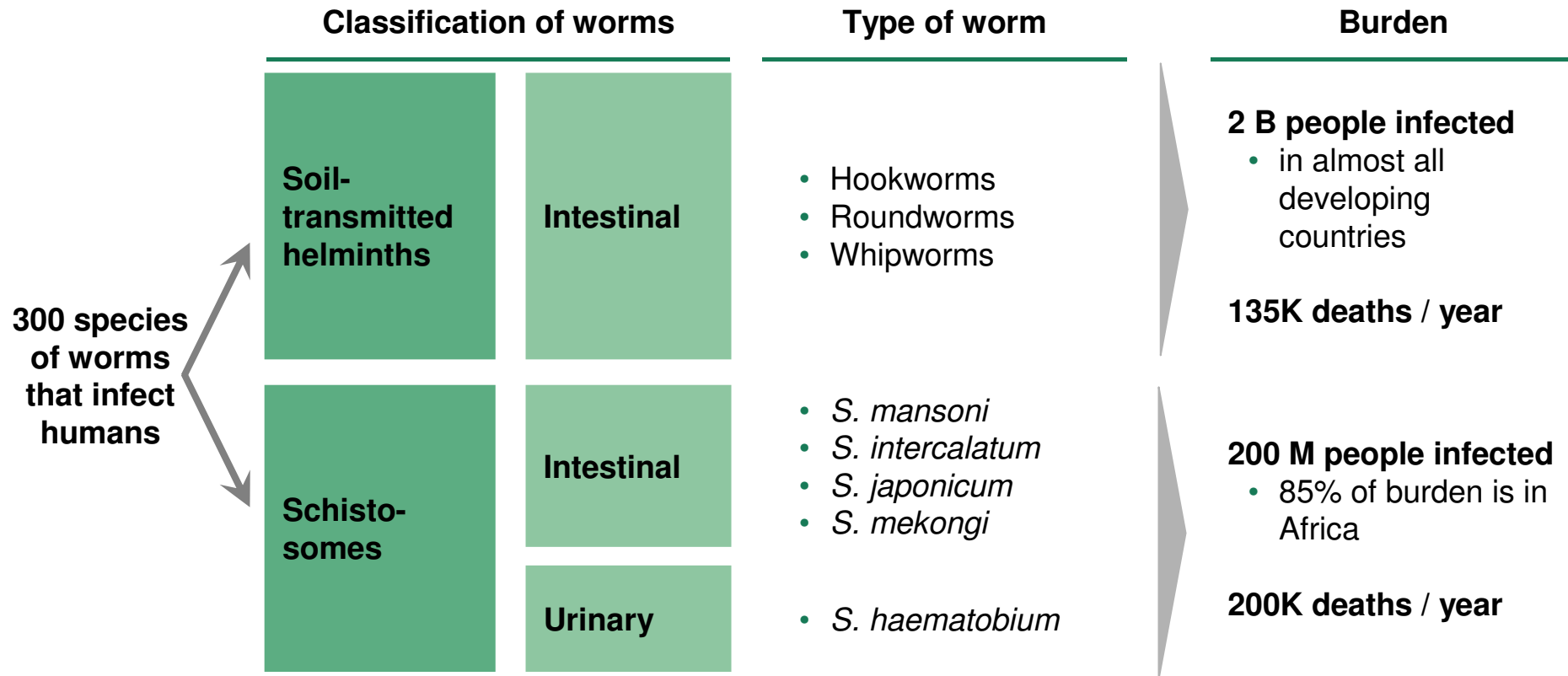
### **Sustainability of program is essential, given that treatment does not prevent reinfection**

- Requires ongoing treatment programs, with associated funding and local capacity
- Results are more sustainable when prevention education supplements treatment
  - Simple and fun-to-use education materials create awareness and induce behavior change
- In long-term, programs that improve hygiene and sanitation reduce infection rates

### **M&E is relatively simple, as proven drug impact allows programs to focus mainly on coverage tracking via simple, easy-to-use tools**

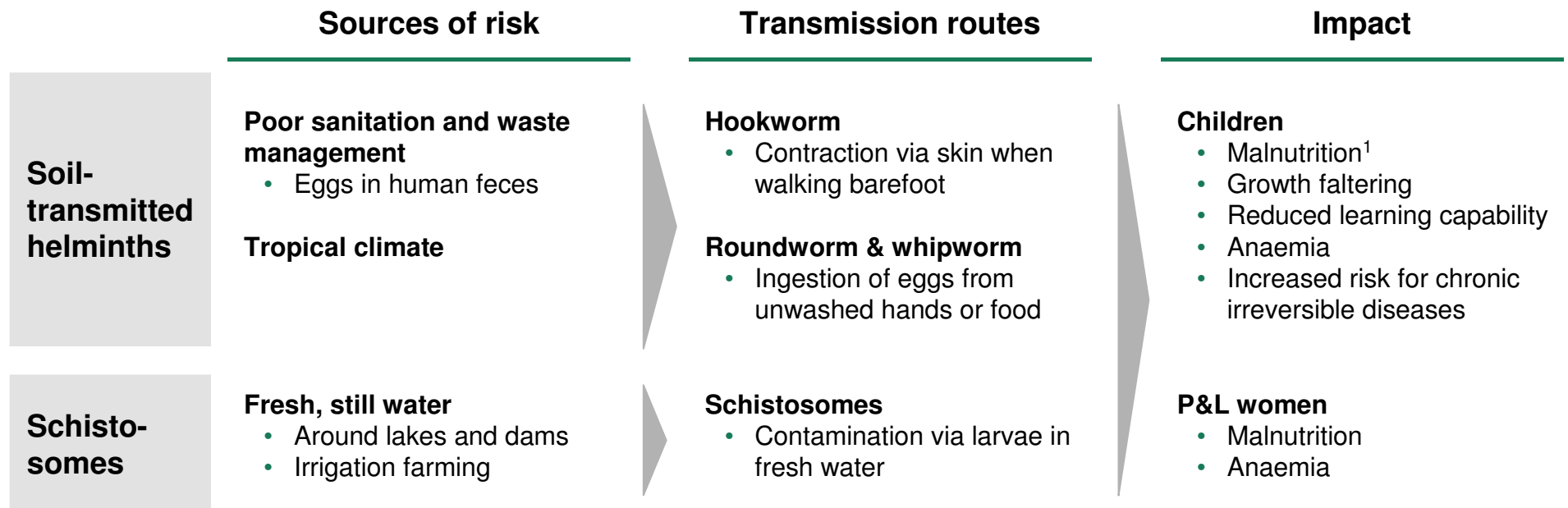
## Why implement

# Several types of worms threaten human health



**While more people are infected with soil-transmitted helminths, more deaths are attributed to schistosomiasis**

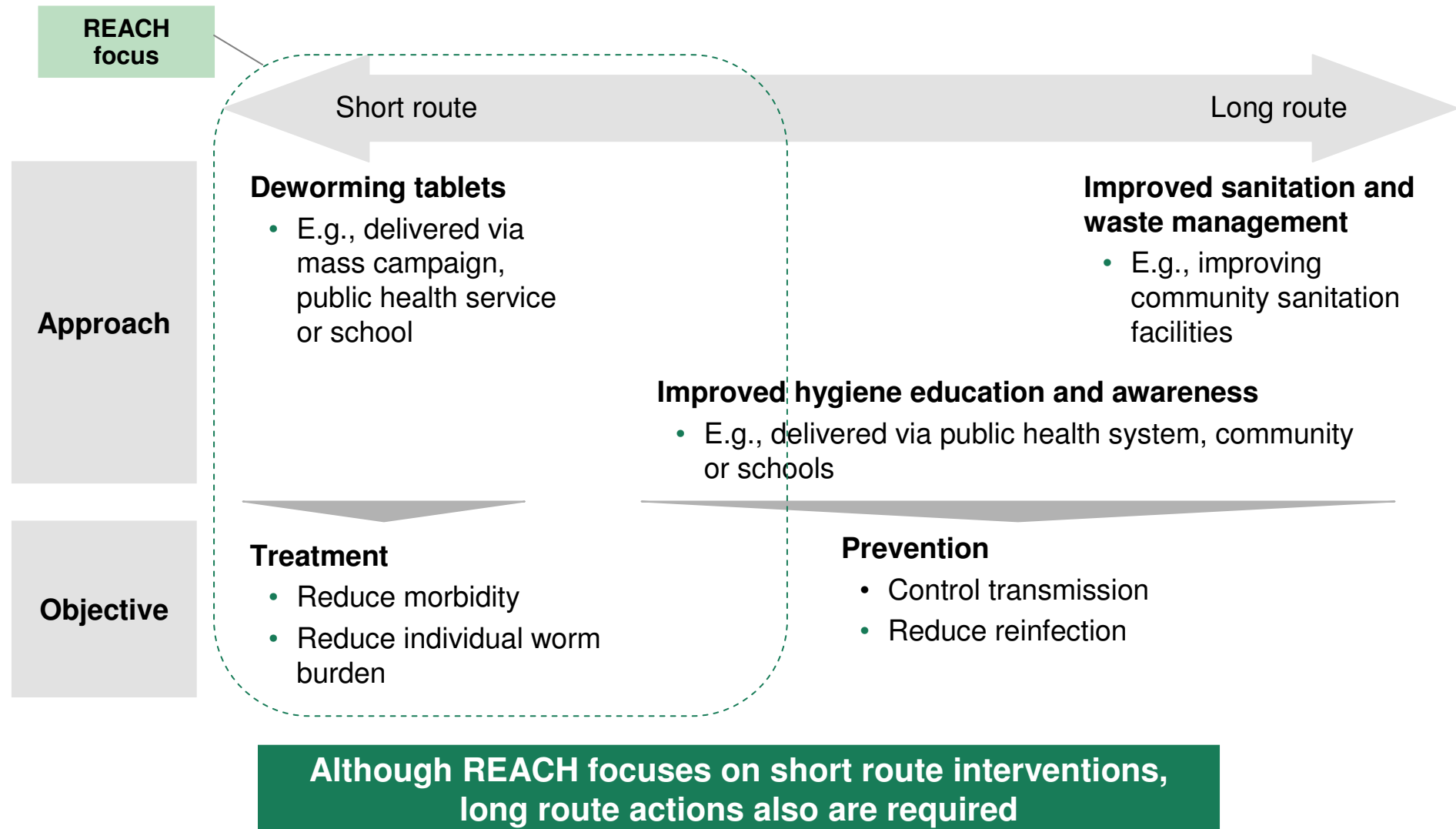
# Worms found in unhygienic and tropical environments cause multiple nutrition-related impacts



1. Worms cause poor nutrient absorption  
Source: "Action against worms. Issue 1." WHO, 2003

# Two complementary means of addressing worms

Deworming offers short-route treatment; hygiene education can supplement when cost-effective





Preliminary

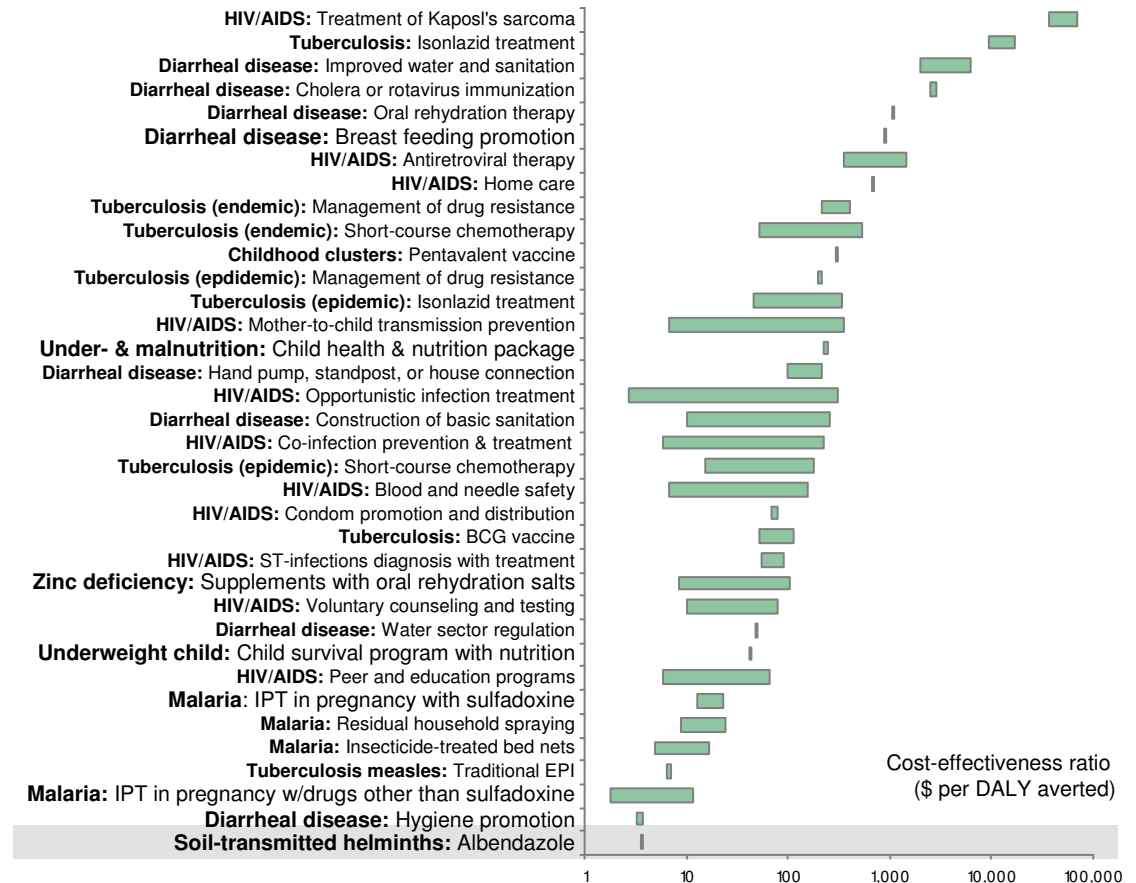
# Helminth treatment is considered one of the most cost-effective interventions available

Treatment is cost-effective...

**Albendazole treatment:** US \$2-9/DALY averted

**Combined albendazole/praziquantel treatment:** US \$8-19/DALY averted

...relative to other low- and middle-income disease interventions

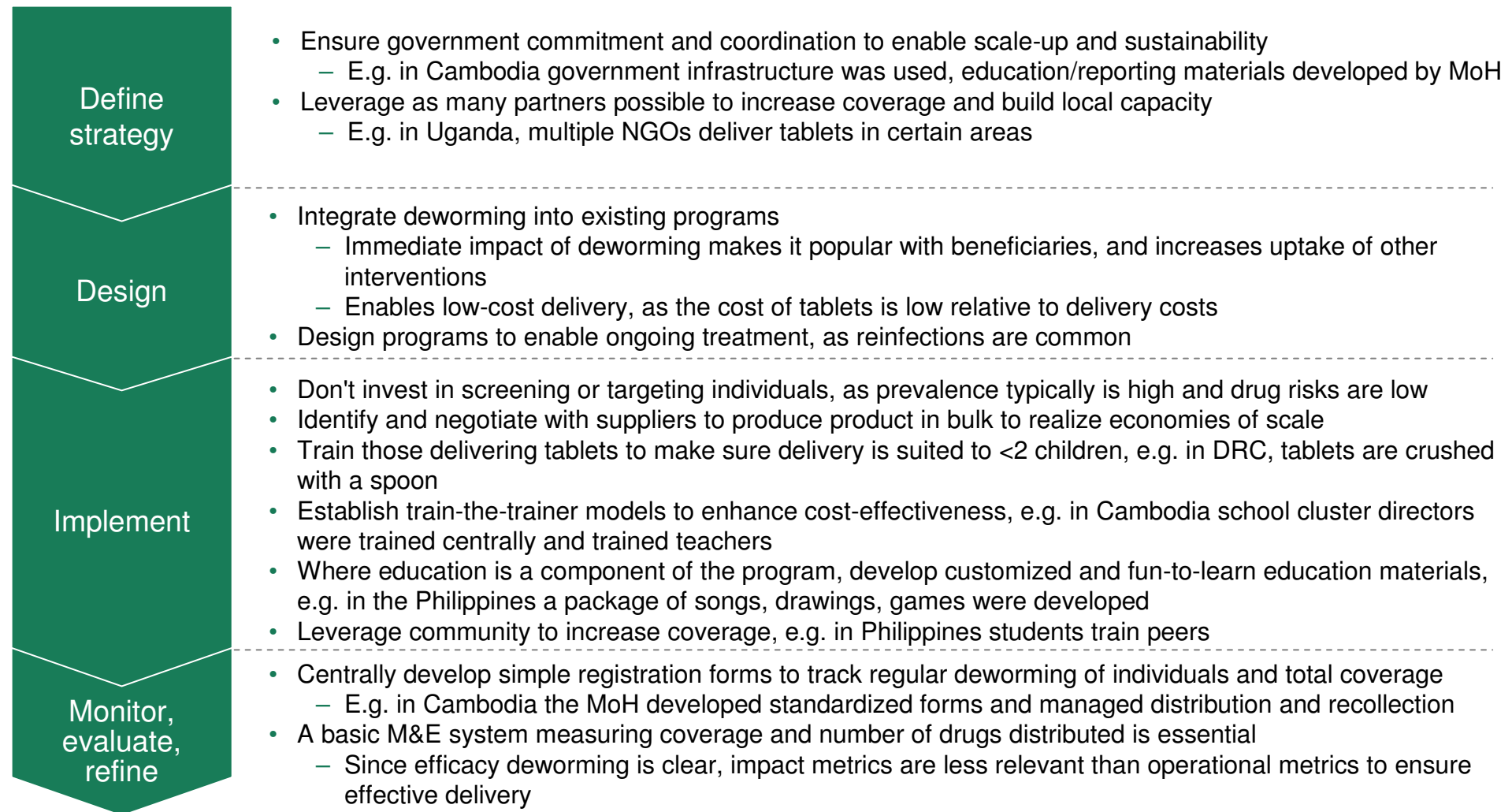


Source: Laxminarayan, et al. *Intervention Cost Effectiveness: Overview of Main Messages*. Disease Control Priorities in Developing Countries, 2<sup>nd</sup> edition, Chapter 2, 2006.

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## How to implement at scale

# Key lessons learned about implementing deworming programs at scale



Source: "Action against worms." WHO, several issues from 2003-2006.; expert interviews; literature review; REACH analysis

# Program strategy influenced by the age of the target beneficiaries

Target group	Infection risk STH <sup>1</sup>	Infection risk SS <sup>2</sup>	Treatment	Primary delivery channel	Training requirements
0-1 year			<ul style="list-style-type: none"> <li>Not recommended due to low infection risk and unproven safety of drugs for this age group<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	
1-2 years <sup>3</sup>	<p>Risk increases as children start to walk</p>		<ul style="list-style-type: none"> <li>Sometimes excluded<sup>4</sup> <ul style="list-style-type: none"> <li>Less heavily infected</li> <li>Difficulty swallowing tablets</li> <li>Added complexity as Albendazole dosage is different<sup>5</sup></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Public health system or mass campaigns</li> </ul>	<p>Increased risk of vomiting and swallowing problems</p>
2-5 years		<p>Risk increases as children start to swim</p>	<ul style="list-style-type: none"> <li>Treated for STH and SS</li> </ul>	<ul style="list-style-type: none"> <li>Public health system or mass campaigns</li> </ul>	
5-15 years			<ul style="list-style-type: none"> <li>Treated for STH and SS</li> </ul>	<ul style="list-style-type: none"> <li>Schools</li> </ul>	
P&L women			<ul style="list-style-type: none"> <li>Treated for STH and SS                             <ul style="list-style-type: none"> <li>All drugs are safe for pregnant women</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Public health system or mass campaigns</li> </ul>	

REACH target beneficiaries
 No risk
  High risk

1. Soil transmitted helminths 2. Schistosomiasis 3. WHO recommendation 4. Especially for large-scale programs where tablets have to be delivered to many beneficiaries and the added complexity of serving 1-2 year olds slows the delivery and therefore reduces capacity 5. Half a tablet instead of a full tablet is given  
 Source: WHO UNICEF, 2004: Joint Statement on Prevention and Control of Schistosomiasis and Soil-Transmitted Helminths; WHO, 2006: Action against Worms; WHO, 2002: Helminth Control in School-Age Children

# Deworming is a relatively simple product to distribute

But sustainable solutions a challenge

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## Simple and cheap to use...

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### Low risk

- Very low skills required to provide pill to children >5
  - Some skill required to provide pills to children <5
- Limited risk of side effects or adverse events reduce risk of treating uninfected children and pregnant women

### Simple distribution requirements

- Shelf life of up to four years
- Pills are heat-stable and require no cold chain
- Low space requirements

### Low cost

- Cost of \$0.02 per soil-transmitted helminth treatment
- Cost of \$0.20 per schistosomiasis treatment

## ...yet difficult to sustain

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### Reinfection is common, especially if

- Treatment is not consistent
- Root causes are not addressed (e.g., lack of sanitation)

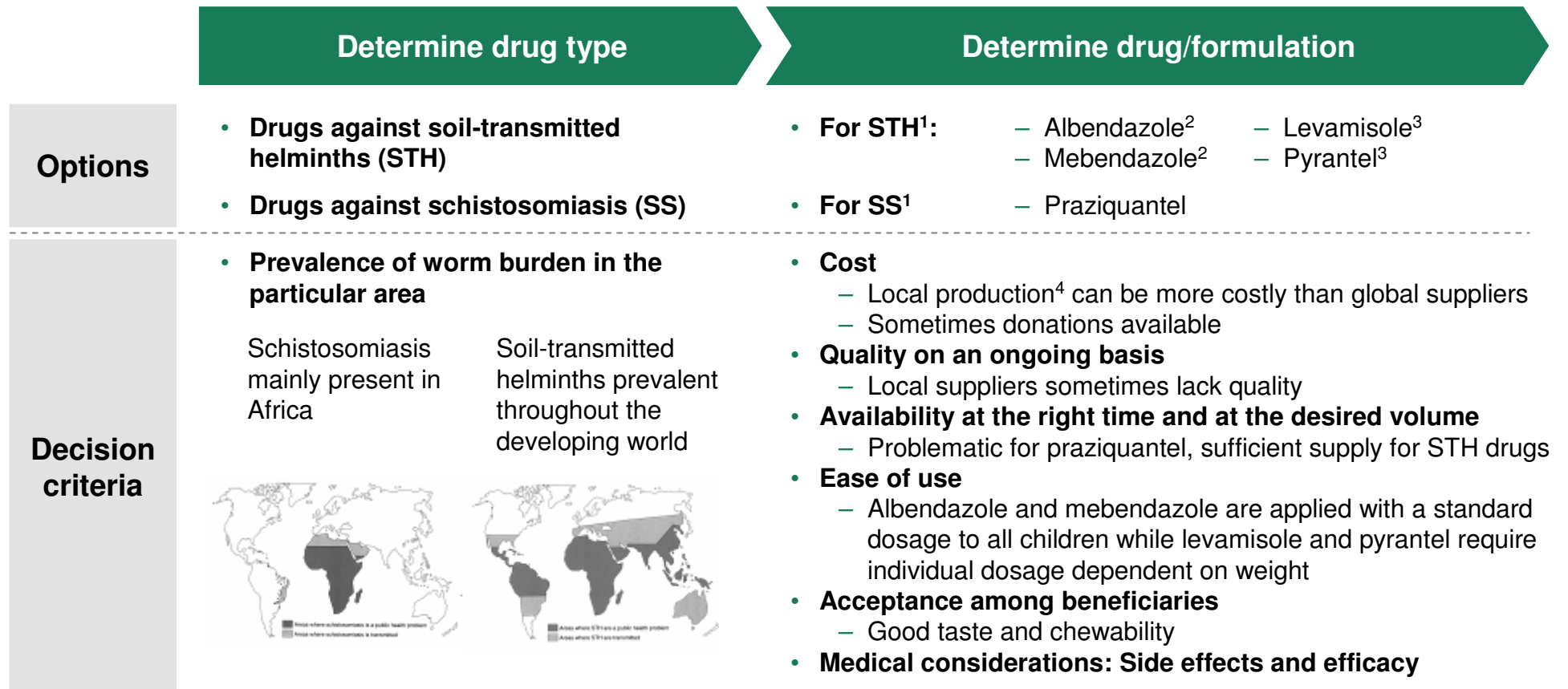
### Multi-year funding is necessary, but difficult

- International funding often limited to a few years
- Despite low tablet costs, long-term deworming programs can overwhelm modest MoH budgets

### Schistosomiasis tablets generally are imported

- Rarely produced domestically
- Limited global supply
- Logistics are complex, requiring a long order lead time
- Mark-up of 15% for sea transportation and 25% for air shipment

# Deworming drug selection based on local worm prevalence and drug characteristics



**For STH albendazole and mebendazole are mainly used because of their easy dosage requirements. For SS only praziquantel is used**

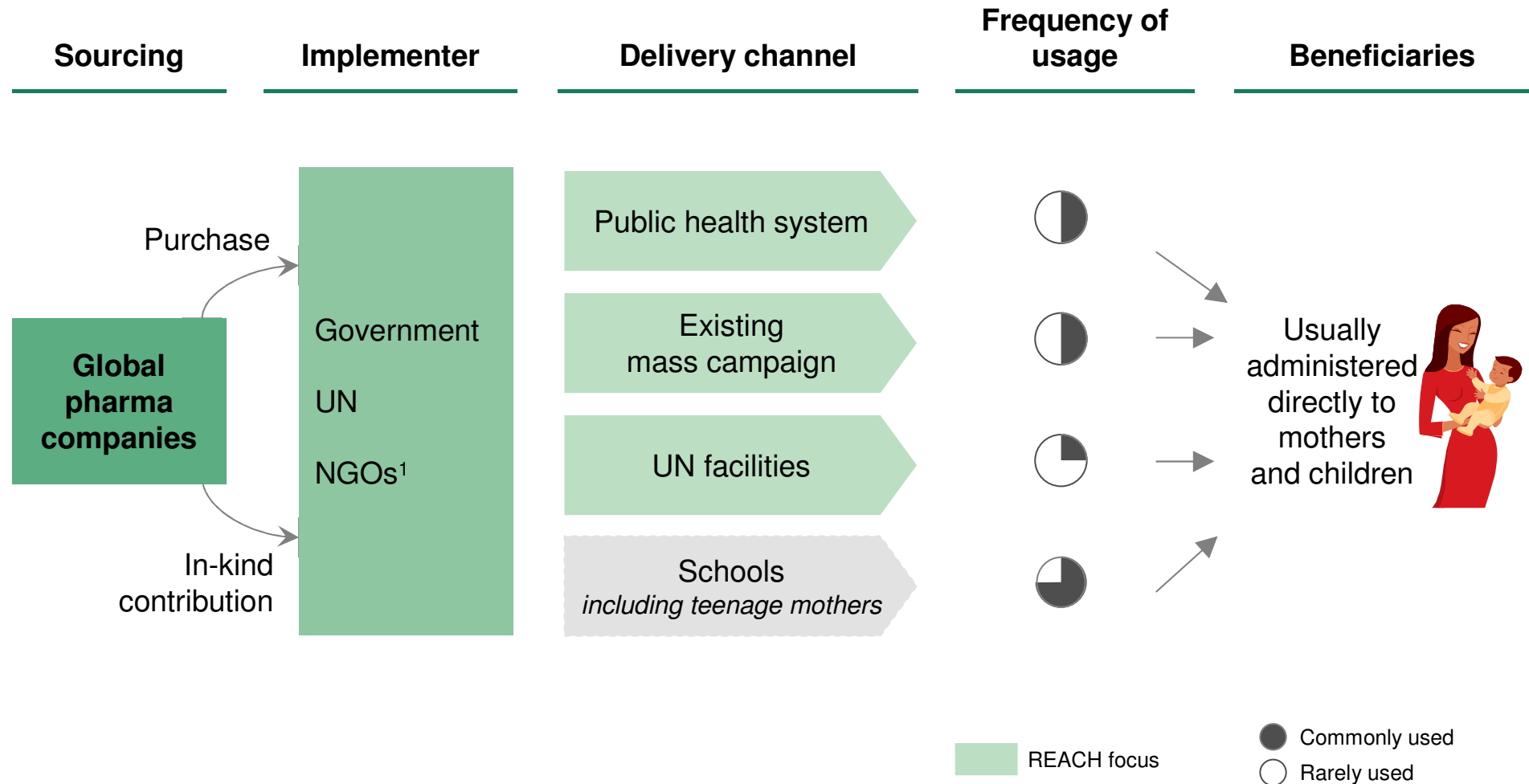
1. WHO recommended drugs 2. Both typically used as dosage is very simple; No major difference in terms of quality and cost between albendazole and mebendazole 3. Levamisole and pyrantel less often used as their dosage requirement is more complicated 4. Local production only for STH tablets, not for schistosomiasis  
 Source: Expert interviews; "Action against worms." WHO, several issues from 2003-2006.

# Dosage and treatment frequency are straightforward, easing complexity of delivery

	Category	Prevalence among school children	Action to be taken	
<b>Soil-transmitted helminth<sup>a</sup></b>	<b>High-risk community</b>	≥50%	Treat all school-age children (enrolled and not enrolled) twice each year <sup>B</sup>	Also treat: •Preschool children; •Women of childbearing age including pregnant women in the 2 <sup>nd</sup> and 3 <sup>rd</sup> trimesters and lactating women; •Adults at high risk in certain occupations (e.g. tea-pickers and miners)
	<b>Low-risk community</b>	≥20% and <50%	Treat all school-age children (enrolled and not enrolled once each year)	
<b>Schisto-somiasis</b>	<b>High-risk community</b>	≥50% by parasitological methods (intestinal and urinary schistosomiasis) Or ≥30% by questionnaire for visible haematuria (urinary schistosomiasis)	Treat all school-age children (enrolled and not enrolled once a year)	Also treat adults considered to be at risk (from special groups to entire communities living in endemic areas)
	<b>Moderate-risk community</b>	≥10% but <50% by parasitological methods (intestinal and urinary schistosomiasis) or <30% by questionnaire for visible haematuria (urinary schistosomiasis)	Treat all school-age children (enrolled and not enrolled) once every 2 years	Also treat adults considered to be at risk  Praziquantel should be available in dispensaries and clinics for treatment of suspected cases
	<b>Low-risk community</b>	<10% by parasitological methods (intestinal and urinary schiotomiasis)	Treat all school-age children (enrolled and not enrolled) twice during their primary schooling age (e.g. once on entry and once on exit)	

<sup>a</sup>prevalence of any STH infection is less than 20%, large-scale preventive chemotherapy interventions are not recommended. Affected individuals should be dealt with on a case-by-case basis.  
<sup>B</sup> If resources are available, a third drug distribution intervention might be added. In this case the appropriate frequency of treatment would be every 4 months.  
 Source: "Preventative chemotherapy in human helminthiasis." WHO, 2006.

# Typical flow of deworming tablets to the child



1. Typically in support of mass campaigns to extend reach to more remote communities. 2. Only partly relevant for REACH  
 Source: "Action against worms." WHO, several issues from 2003-2006.; expert interviews; REACH analysis



# Deworming is often piggy-backed onto existing programs

Opportunities to leverage/expand existing programs

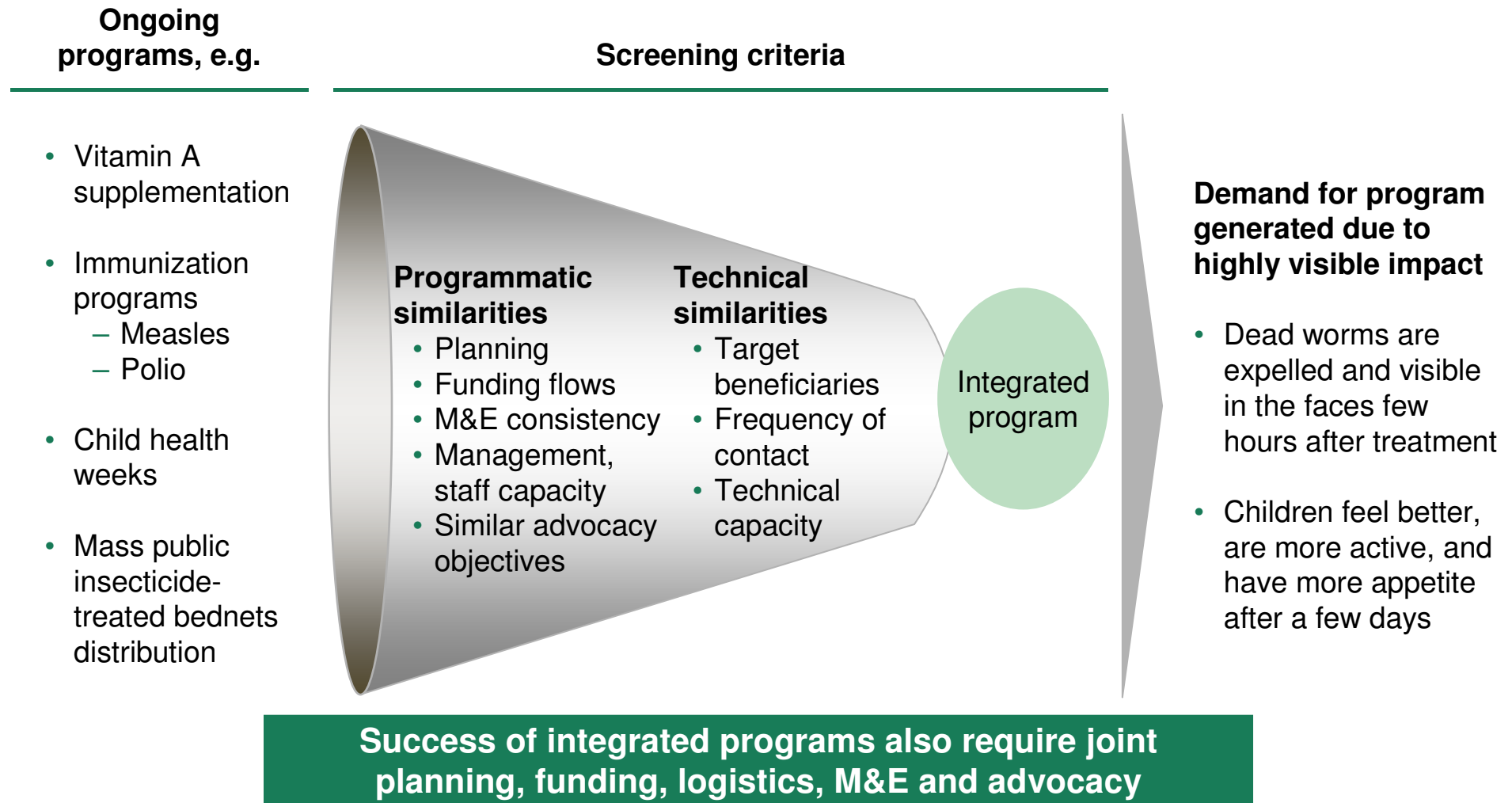
	Typical channels	Strengths	Challenges
<b>Potentially standalone programs<sup>1</sup></b>	<b>Schools</b> <ul style="list-style-type: none"> <li>Provision to school children including teenage mothers</li> </ul>	<ul style="list-style-type: none"> <li>Scalable<sup>2</sup></li> <li>Very cost-effective</li> <li>Good outreach</li> <li>Effective education component</li> <li>Sustainable as capacity is built</li> </ul>	<ul style="list-style-type: none"> <li>Only reaches school-age children</li> <li>Training teachers in delivering to children &lt;5 is difficult due to high number of teachers</li> </ul>
<b>Typically integrated programs</b>	<b>Public health system</b> <ul style="list-style-type: none"> <li>As part of IMCI</li> </ul>	<ul style="list-style-type: none"> <li>Scalable</li> <li>Low incremental cost</li> <li>Reaches all target beneficiaries</li> <li>Sustainable as capacity is built</li> </ul>	<ul style="list-style-type: none"> <li>Often lack capacity</li> <li>Often limited outreach and coverage</li> </ul>
	<b>Existing mass campaign</b> <ul style="list-style-type: none"> <li>E.g., vitamin A supplementation, vaccination</li> </ul>	<ul style="list-style-type: none"> <li>Scalable</li> <li>Low incremental cost</li> <li>Often high outreach</li> <li>Reaches all target beneficiaries</li> </ul>	<ul style="list-style-type: none"> <li>Limited educational component</li> <li>Technical and programmatic fit with other interventions</li> </ul>
	<b>UN facilities</b> <ul style="list-style-type: none"> <li>E.g. in supplementary feeding centers</li> </ul>	<ul style="list-style-type: none"> <li>Scalable</li> <li>Low incremental cost</li> <li>Reaches all target beneficiaries</li> </ul>	<ul style="list-style-type: none"> <li>Sustainable only while UN funding</li> <li>Does not build ongoing local capacity</li> </ul>

**As the delivery requirements are low, many channels are suitable to deliver deworming tablets**

1. Sometimes integrated into school feeding programs 2. One teacher can treat about 50-100 children per day  
 Source: "Action against worms." WHO, several issues from 2003-2006.; expert interviews; REACH analysis

# Deworming also can increase uptake of programs

Strong logic to integrate into existing delivery channels



# Simple training guidelines, tailored for local norms, enable training of non-medical tablet providers

## Sample provider training materials:

### Guide for field staff from Congo



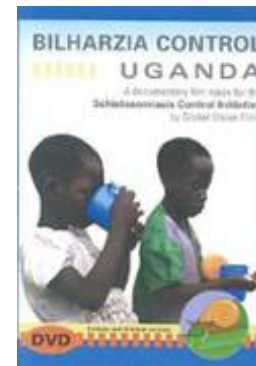
- Focus on essentials to make it usable in the field

### Guide for district level managers from Kenya



- Detailed instructions as district managers further disseminate knowledge (multiplier)

### Training video from Uganda



- Visualisation to make training more understandable and memorable

### Book for teachers from Mauritania



- Detailed guidelines to structure a lesson

# For children, prevention education is most effective when employing multiple tools that are fun to use

## Sample educational materials:

Comic for children from Tanzania



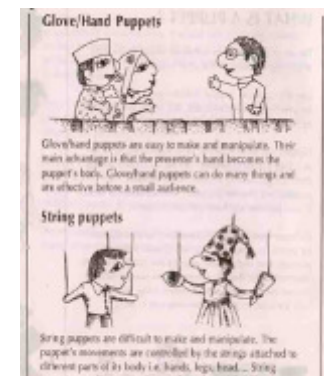
Poster from Ecuador



Card game from Laos



Teaching puppets from India



Radio spot from South Africa

Spot nr 1

Child Hello mother, what are you reading?  
 Mother I am reading an interesting brochure on worm infection in people and that worms cause health problems  
 Child Oh Juk!  
 Mother It says here that to have worms is not natural but a sickness  
 Child Can you take medicine to make you well again?  
 Mother Yes, but it is better to PREVENT worm infection

Calendar pages from various countries



Exercise book from Congo



# Simple registration forms enable low-cost tracking of overall coverage and individual continuous treatment

Control booklet from Ecuador

The control booklet from Ecuador, titled "carta de control", features a grid for tracking treatment progress. The grid has columns for "Nombre" (Name), "Parentesco" (Relationship), "Edad" (Age), and "Recibió Dosis" (Received Dose). The "Recibió Dosis" column is divided into six colored boxes representing different doses. Below the grid, there are six numbered boxes (1-6) for recording treatment dates.

- Upper part used by health workers to track continuous treatment of individual child
- Lower part can be kept by child/mother to "visualize" treatment progress and success

Medical forms from Ecuador

The medical forms from Ecuador are titled "PROGRAMA DE DESPARASITACION PARA NIÑOS DE 1 A 4 AÑOS Y SU FAMILIA (HERMANOS Y PADRES)". They include a registration form with fields for name, address, and contact information, and a table for recording treatment dates.

Another medical form from Ecuador, titled "PROGRAMA DE DESPARASITACION PARA NIÑOS DE 1 A 4 AÑOS Y SU FAMILIA (HERMANOS Y PADRES)", includes a registration form and a table for recording treatment dates.

Registration forms from Cambodia

The registration forms from Cambodia are titled "CAMBODIA: Form to fill by any organisation involved in de-worming". They include a registration form with fields for name, address, and contact information, and a table for recording treatment dates.

- Standardized form to report overall coverage of children according to district and age group
- Allows easy aggregation of data on a national level

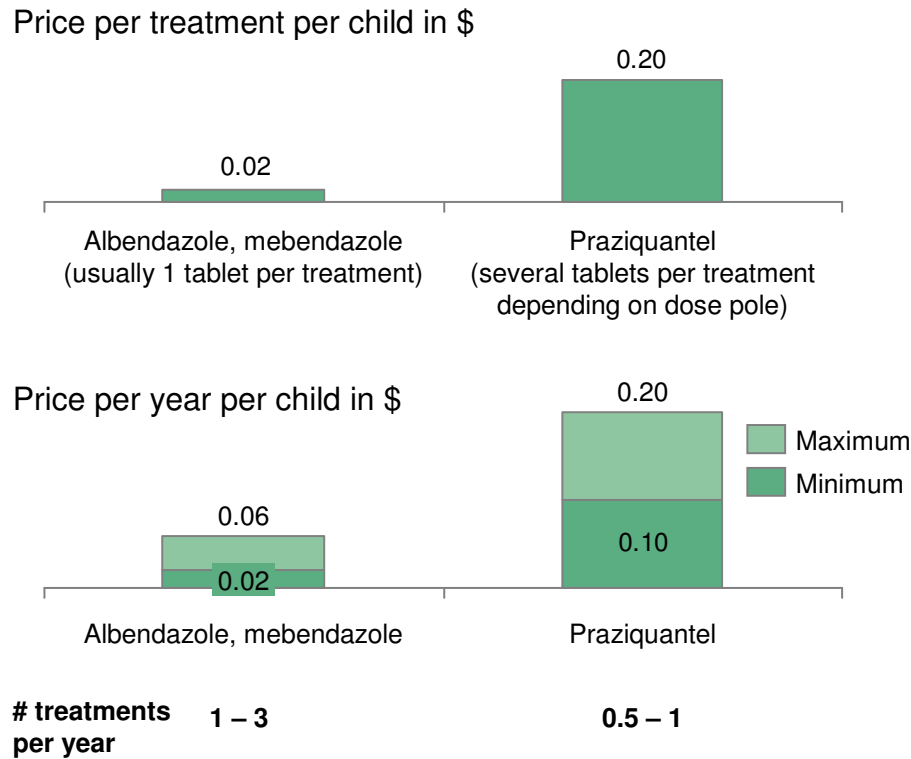
**Treatment monitoring can be integrated into child health cards to minimize the number of forms that are in use**

## What it costs

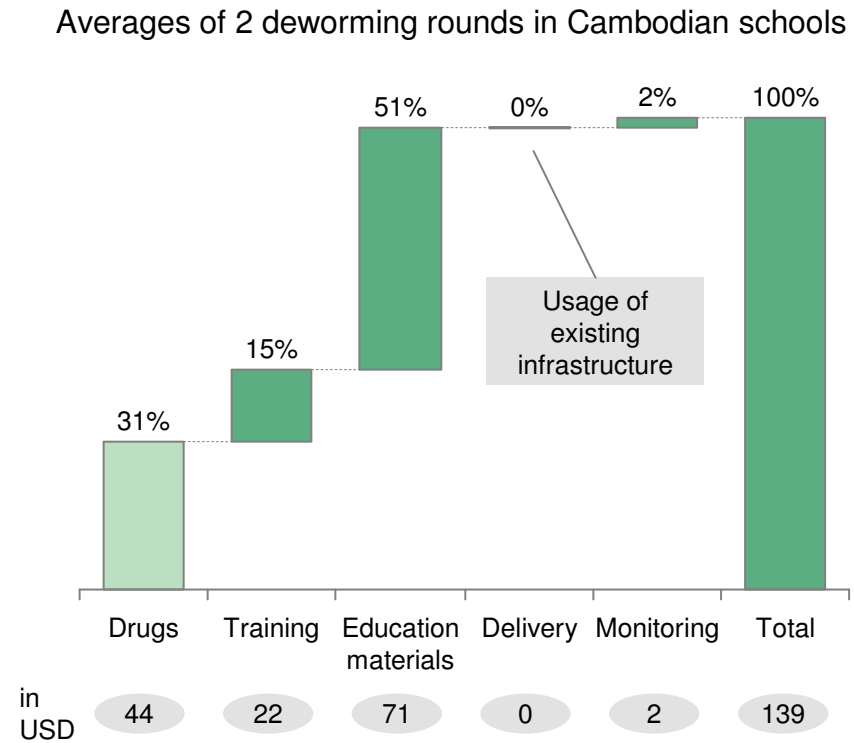
Preliminary

# Deworming tablets are relatively minor element of cost structure

Tablet costs



Typical program cost structure



Low cost of drugs makes deworming strong candidate to link with other programs

1. A mark-up of 15% for sea or 25% for air transportation and a 5–10% buffer for loss and theft should be factored in  
Source: "Action against worms." WHO, 2006; "School deworming. Joint statement." World Bank/WHO/UNICEF, 2003.; "Financial costs of deworming children in all primary schools in Cambodia." Sinuon et. al., 2004; REACH analysis

# Centralized bulk purchasing reduces drug costs significantly

Especially important for high price praziquantel — less relevant for STH drugs

## High SS drug prices ...

### Production<sup>1</sup>

- Complex synthesis process of the drug
- Polluting production process that incurs additional costs
- High transportation costs as 8 out of 10 manufacturers<sup>2</sup> are located in Asia
- Lack of capacity as the profit margin for manufacturers is low
- Low number of manufacturers

### Purchase

- Absence of long-term funding impedes multi-year orders
- Relatively small quantities ordered for each program round

## ... create need for central purchasing ...

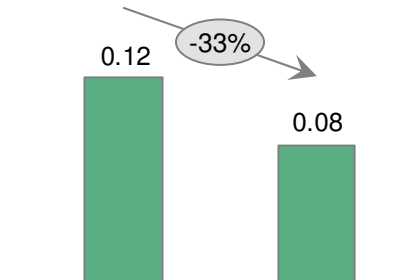
Available via WHO Web Buy or Schistosomiasis Control Initiative (SCI), which provide

- Quality assurance:
  - Prequalification of suppliers according to Good Manufacturing Practice (GMP)
  - Testing of batches
- Lower prices through
  - Bundling of volumes and bulk purchasing
  - Multi-year contracts with manufacturers
  - Consolidated demand forecasts provided to manufacturers
- Monitoring of delivery timing
- Higher price transparency

## ... which has multiple benefits

### 1 Lower cost per drug

Unit cost for praziquantel in US\$ (example from SCI program)



### 2 Assured drug quality

### 3 National program managers not burdened with complex procurement

1. Only applies to praziquantel 2. Manufacturers that conform with international standards  
Source: "Action against worms. Issue7." WHO, 2006; REACH analysis



## Where to go for further information

## Key reference materials: Deworming

### Normative guidance

- "Preventive chemotherapy in human helminthiasis. Coordinated use of anthelmintic drugs in control interventions: a manual for health professionals and program managers." WHO, 2006
- "Prevention and control of schistosomiasis and soil-transmitted helminthiasis. Joint Statement." WHO/UNICEF, 2004.
- "School deworming. Joint Statement." WHO/UNICEF/WB, 2003
- "Prevention and control of schistosomiasis and soil-transmitted helminths." WHO, 2002
- "Report of the WHO informal consultation on the use of praziquantel during pregnancy/lactation and albendazole/mebendazole in children under 24 months." WHO, 2002

### Operational guidance

- "Helminth control in school-age children – A guide for managers of control programs." WHO, 2002
- "How to add deworming to vitamin A distribution." WHO/ UNICEF, 2004

### Training materials

- Available from the Partner for Parasite Control webpage ([www.who.int/wormcontrol/en](http://www.who.int/wormcontrol/en))

**In addition, the quarterly newsletter "Action against worms" by the Partners for Parasite Control (WHO) is a good source for practical tips**

# Organizations: Deworming (I)

Multilateral	Organization	Description	Key activities
	<b>WHO - Partners for Parasite Control</b> <ul style="list-style-type: none"> <li>• <a href="http://www.who.int/wormcontrol">www.who.int/wormcontrol</a></li> </ul>	<ul style="list-style-type: none"> <li>• Joint initiative of UN agencies (hosted at WHO), academia and NGOs to fight schistosomiasis and STHs launched after the WHA in 2001</li> </ul>	<ul style="list-style-type: none"> <li>• Advocacy</li> <li>• Global monitoring</li> <li>• Knowledge exchange</li> </ul>
	<b>UNICEF</b> <ul style="list-style-type: none"> <li>• <a href="http://www.unicef.org">www.unicef.org</a></li> </ul>	<ul style="list-style-type: none"> <li>• UN Nations Childrens' Fund</li> </ul>	<ul style="list-style-type: none"> <li>• Implement                             <ul style="list-style-type: none"> <li>– Mainly for children &lt;5</li> </ul> </li> </ul>
	<b>WFP</b> <ul style="list-style-type: none"> <li>• <a href="http://www.wfp.org">www.wfp.org</a></li> </ul>	<ul style="list-style-type: none"> <li>• Emergency food aid organization of the UN</li> </ul>	<ul style="list-style-type: none"> <li>• Implement                             <ul style="list-style-type: none"> <li>– Within school feeding</li> </ul> </li> </ul>
	<b>UNHCR</b> <ul style="list-style-type: none"> <li>• <a href="http://www.unhcr.org">www.unhcr.org</a></li> </ul>	<ul style="list-style-type: none"> <li>• UN refugee agency</li> </ul>	<ul style="list-style-type: none"> <li>• Implement                             <ul style="list-style-type: none"> <li>– In refugee camps</li> </ul> </li> </ul>
	<b>World Bank</b> <ul style="list-style-type: none"> <li>• <a href="http://www.worldbank.org">www.worldbank.org</a></li> </ul>	<ul style="list-style-type: none"> <li>• International development bank</li> </ul>	<ul style="list-style-type: none"> <li>• Funding Implement                             <ul style="list-style-type: none"> <li>– In FRESH school health programs</li> </ul> </li> </ul>

# Organizations: Deworming (II)

	Organization	Description	Key activities
NGO	<b>Schistosomiasis Control Initiative</b> <ul style="list-style-type: none"> <li><a href="http://www.schisto.org">www.schisto.org</a></li> </ul>	<ul style="list-style-type: none"> <li>Established at Imperial College London in 2002 through Gates funding</li> </ul>	<ul style="list-style-type: none"> <li>Country assistance in implementation                             <ul style="list-style-type: none"> <li>– Focus on Sub-Saharan Africa</li> </ul> </li> <li>Secondary funding</li> </ul>
	<b>CARE</b> <ul style="list-style-type: none"> <li><a href="http://www.care.org">www.care.org</a></li> </ul>	<ul style="list-style-type: none"> <li>Humanitarian organization fighting global poverty</li> </ul>	<ul style="list-style-type: none"> <li>Implement                             <ul style="list-style-type: none"> <li>– In multiple countries</li> </ul> </li> </ul>
	<b>Partnership for Child Development</b> <ul style="list-style-type: none"> <li><a href="http://www.child-development.org">www.child-development.org</a></li> </ul>	<ul style="list-style-type: none"> <li>NGO aimed at improving education, health and nutrition of school-age children in LICs</li> </ul>	<ul style="list-style-type: none"> <li>Research</li> <li>Knowledge sharing</li> <li>Assistance in multiple country programs</li> </ul>
Bilateral	<b>Government of Japan</b> <ul style="list-style-type: none"> <li><a href="http://www.mofa.go.jp">www.mofa.go.jp</a></li> </ul>	<ul style="list-style-type: none"> <li>Government invests and actively supports deworming through Hashimoto Initiative</li> </ul>	<ul style="list-style-type: none"> <li>Funding</li> <li>Operates three regional training centres</li> <li>Runs technical training courses</li> </ul>
	<b>CIDA</b> <ul style="list-style-type: none"> <li><a href="http://www.acdi-cida.gc.ca">www.acdi-cida.gc.ca</a></li> </ul>	<ul style="list-style-type: none"> <li>Development aid agency of Canada</li> </ul>	<ul style="list-style-type: none"> <li>Funding for WFP deworming programs within school feeding</li> </ul>

# Organizations: Deworming (III)

	Organization	Description	Key activities
Foundation	<b>Bill and Melinda Gates Foundation</b> <ul style="list-style-type: none"> <li><a href="http://www.gatesfoundation.org">www.gatesfoundation.org</a></li> </ul>	<ul style="list-style-type: none"> <li>Active in global health</li> </ul>	<ul style="list-style-type: none"> <li>Funding of PPC, SCI and the Sabin Institute for their deworming work</li> </ul>
	<b>Danish Bilharzia Laboratory</b> <ul style="list-style-type: none"> <li><a href="http://www.dblnet.dk">www.dblnet.dk</a></li> </ul>	<ul style="list-style-type: none"> <li>Research institution specialized on bilharzia</li> </ul>	<ul style="list-style-type: none"> <li>Research</li> <li>Provision of training, Implementation advice</li> </ul>
Research	<b>Johns Hopkins</b> <ul style="list-style-type: none"> <li><a href="http://www.jhu.edu">www.jhu.edu</a></li> </ul>	<ul style="list-style-type: none"> <li>University, School of public health</li> </ul>	<ul style="list-style-type: none"> <li>Research on drugs</li> </ul>
	<b>London School of Hygiene and Tropical Medicine</b> <ul style="list-style-type: none"> <li><a href="http://www.lshtm.ac.uk">www.lshtm.ac.uk</a></li> </ul>	<ul style="list-style-type: none"> <li>University specialized in international public health and tropical medicine</li> </ul>	<ul style="list-style-type: none"> <li>Research on drugs</li> <li>Training</li> </ul>

# Scaled-up programs: Deworming

Name/country	Implementing partners	Other information
Burkina Faso National Schistosomiasis and Soil-Transmitted Helminth Control Program (PNLSc)	Ministry of Health, Schistosomiasis Control Initiative	<ul style="list-style-type: none"> <li>Over 1 M children had been treated</li> </ul>
Cambodia school deworming program <sup>1</sup>	Ministry of Health with support from WHO and UNICEF	<ul style="list-style-type: none"> <li>Distribution through existing MoH and education system infrastructure and staff</li> <li>2.8M school children covered</li> </ul>
Deworming integrated into Democratic Republic of Congo's national vitamin A campaign	Ministry of Health	<ul style="list-style-type: none"> <li>Deworming fully integrated into mass campaign</li> <li>10M children dewormed representing about 90% of the target group</li> </ul>
National Control Program Guinea	Ministry of Health	<ul style="list-style-type: none"> <li>&gt;1M school children treated (coverage 50%)</li> <li>Presence of schistosomes detected by urine and blood tests on children dropped by 70%</li> </ul>
Nepal integration of deworming into national vitamin A campaign	Ministry of Health, UNICEF	
Nepal school deworming program <sup>1</sup>	Ministry of Health and ministry of Education and WF	<ul style="list-style-type: none"> <li>Deworming integrated into school feeding program</li> <li>~512K tablets distributed with an estimated coverage of 91%</li> </ul>
Vietnam school deworming program	Ministry of Health and ministry of Education	<ul style="list-style-type: none"> <li>Existing infrastructure and staff used for delivery</li> <li>2.7M children dewormed, coverage of about 95%</li> </ul>

1. Initial case study provided

## Appendix: experts consulted

## Experts consulted during preparation of this document

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Name	Organization and title	Area of expertise
Pramila Ghimire	WFP coordinator, Nepal	Implementation
Antonio Montresor	WHO, Focal point for helminth control in WPRO	Implementation, research