



Drugs for Neglected Disease *initiative*

A Patient Needs-Driven & Innovative R&D Model

Pascale Boulet, Head of Policy Affairs

DNDi

Drugs for Neglected Diseases *initiative*



Medical innovation – changing business models

WHO-WIPO-WTO technical symposium, Geneva, 5 July 2013

Responding to the Needs of Patients Suffering from Neglected Diseases



Malaria



Leishmaniasis



Paediatric HIV



Sleeping Sickness (HAT)



Chagas Disease



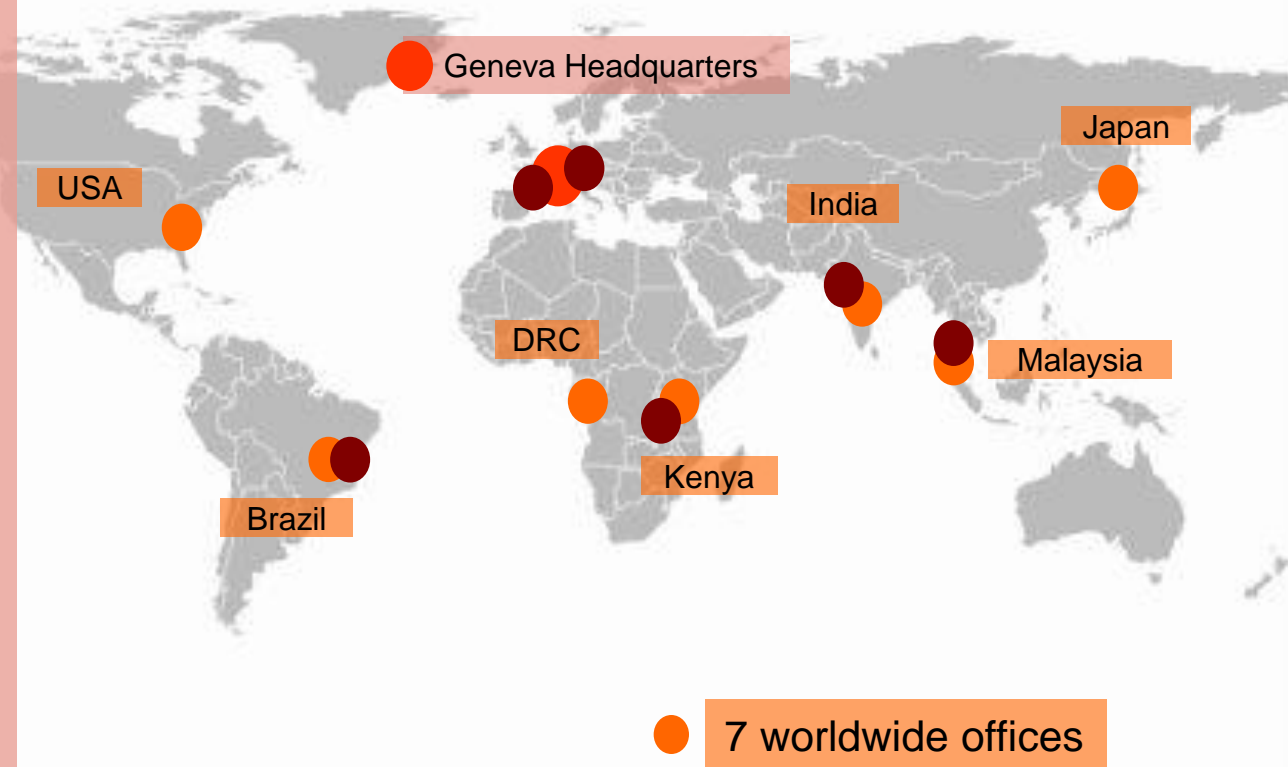
Filaria

Patient Needs-Driven & Innovative R&D Model

- Deliver **11 to 13 new treatments by 2018**
- Establish a **robust pipeline**
- Use and strengthen existing **capacity in disease-endemic countries**
- **Raise awareness** and advocate for increased **public leadership**

Founding Partners

- Indian Council for Medical Research (ICMR)
- **Kenya Medical Research Institute (KEMRI)**
- Malaysian MOH
- Oswaldo Cruz Foundation, Brazil
- Médecins Sans Frontières (MSF)
- Institut Pasteur France
- TDR (permanent observer)



6 New Treatments Developed Since 2007

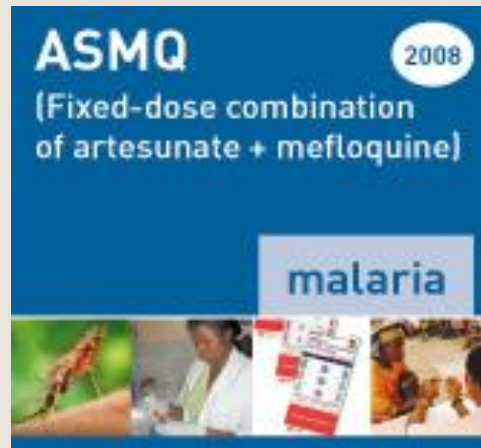
ASAQ 2007
(Fixed-dose combination of artesunate + amodiaquine)

malaria

A poster for ASAQ malaria treatment. The top half is a solid brown color with white text. The bottom half features a collage of images: a mosquito on a person's arm, a healthcare worker in a white coat, and a box of ASAQ medicine.

ASMQ 2008
(Fixed-dose combination of artesunate + mefloquine)

malaria

A poster for ASMQ malaria treatment. The top half is a solid blue color with white text. The bottom half features a collage of images: a mosquito on a person's arm, a healthcare worker in a white coat, and a box of ASMQ medicine.

NECT 2009
(Nifurtimox-eflornithine combination therapy)

sleeping sickness stage 2

A poster for NECT sleeping sickness treatment. The top half is a solid teal color with white text. The bottom half features a collage of images: a mosquito, a healthcare worker in a white coat, and bottles of NECT medicine.

✓ Easy to Use ✓ Affordable ✓ Field-Adapted ✓ Non-Patented

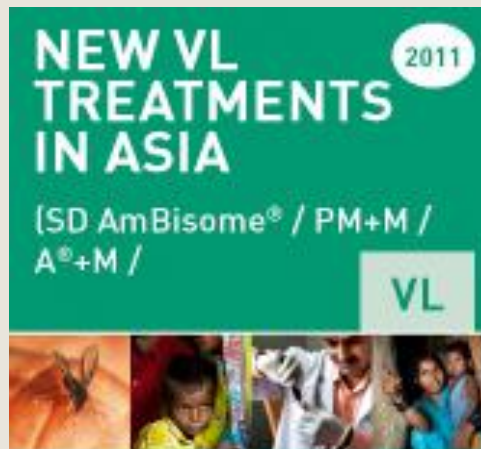
SSG&PM 2010
(Sodium stibogluconate & paromomycin combination therapy)

VL

A poster for SSG&PM VL treatment. The top half is a solid magenta color with white text. The bottom half features a collage of images: a mosquito, a healthcare worker in a white coat, and a box of SSG&PM medicine.

NEW VL TREATMENTS IN ASIA 2011
(SD AmBisome® / PM+M / A®+M /)

VL

A poster for NEW VL TREATMENTS IN ASIA. The top half is a solid green color with white text. The bottom half features a collage of images: a mosquito, a healthcare worker in a white coat, and a group of people.

Benznidazole 12.5 mg
Pediatric dosage form of benznidazole

Chagas disease

A poster for Benznidazole Chagas disease treatment. The top half is a solid green color with white text. The bottom half features a collage of images: a mosquito, a healthcare worker in a white coat, and a child.

Patient Needs-Driven: Beginning With The End In Mind

Definition of the Target Product Profiles with experts of endemic countries, researchers, clinicians, control programmes, patients associations, WHO, etc.

TPP Criteria

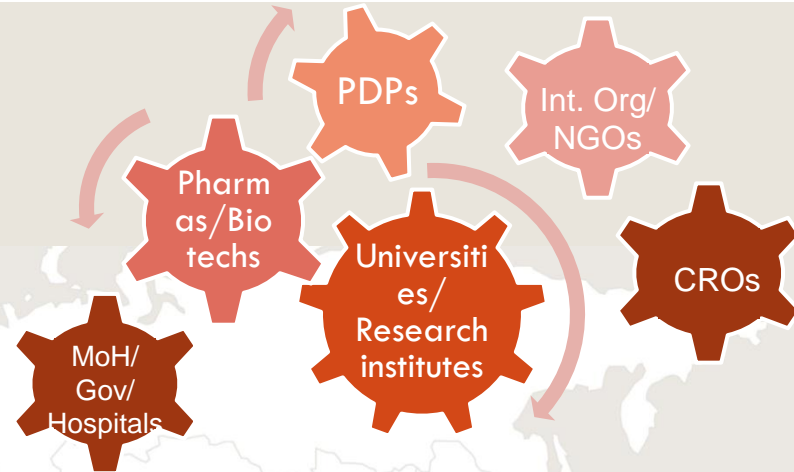
- Indications
- Population
- Clinical Efficacy
- Safety and Tolerability
- Stability
- Route of Administration
- Dosing Frequency
- Cost



A Global Network to Leverage Resources

Criteria for Success:

- Share the same vision
- Mutual understanding
- Involvement throughout the whole process



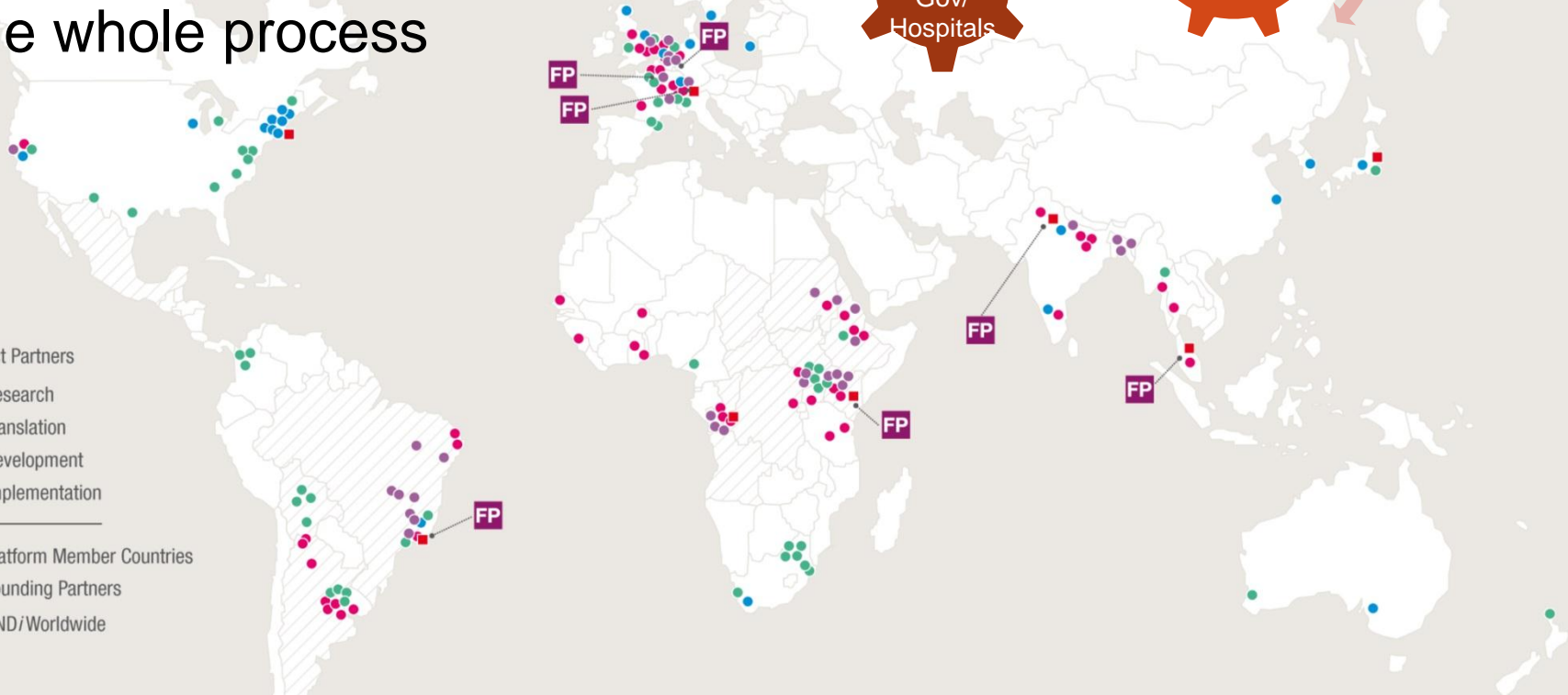
Project Partners

- Research
- Translation
- Development
- Implementation

▨ Platform Member Countries

FP Founding Partners

■ DND/Worldwide

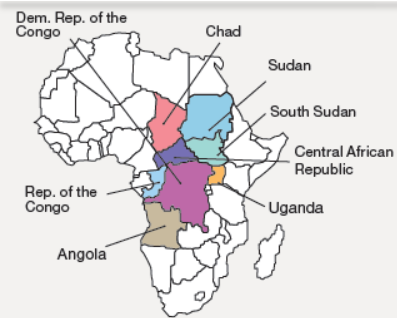


Utilizing and Strengthening Research Capacities in Disease-Endemic Countries

LV



HAT



CHAGAS



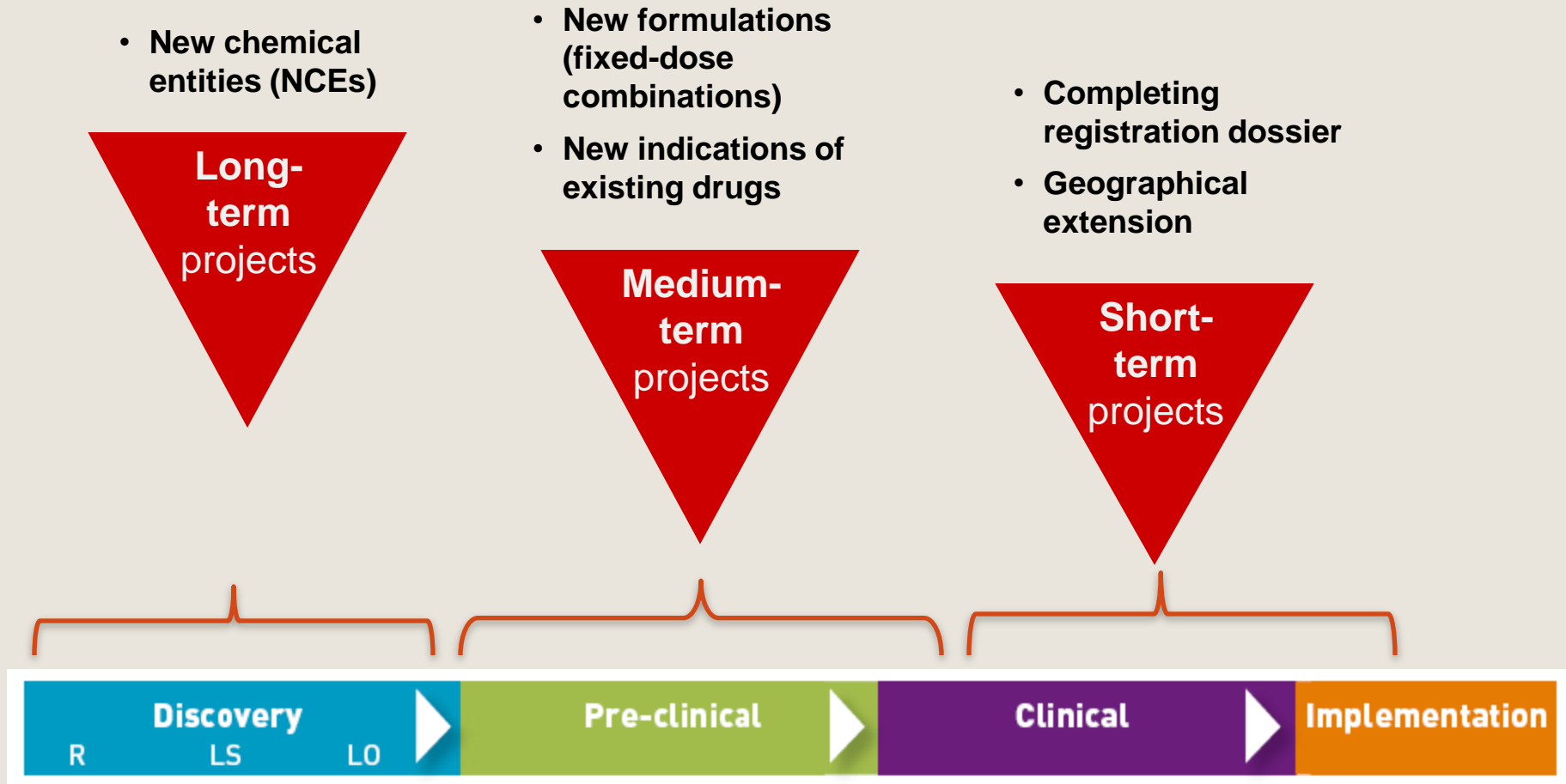
Countries highlighted on the map represent Chagas disease-endemic Latin American countries with platform members. Many other CCRP members not shown on this map but are listed below.

Major Role of Regional Disease Platforms:

- ❑ Defining patients' needs and target product profile (TPP)
- ❑ Strengthening local capacities
- ❑ Conducting clinical trials (Phase II/III studies)
- ❑ Facilitating registration
- ❑ Accelerating implementation of new treatments (Phase IV & pharmacovigilance studies)

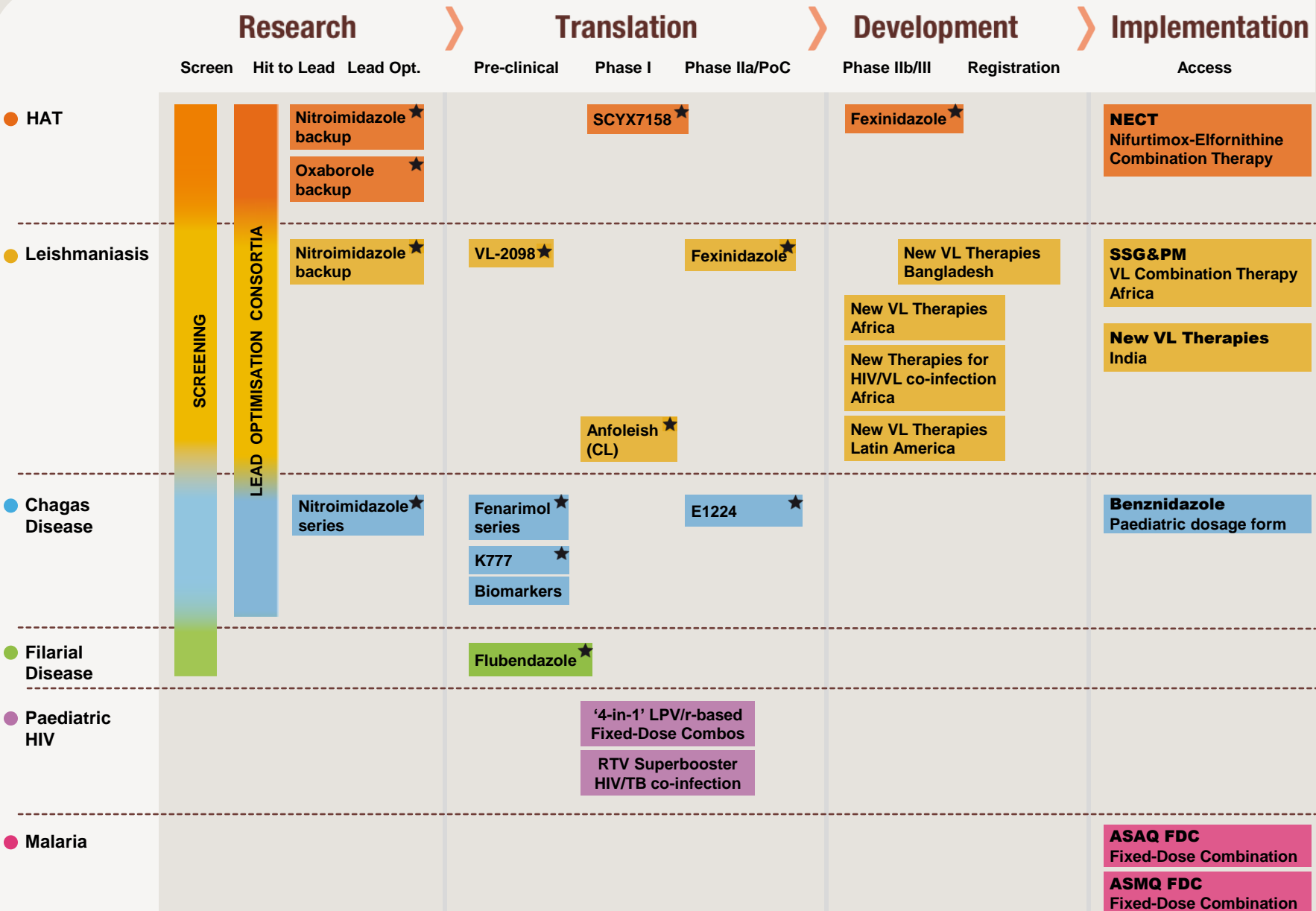
DNDi Portfolio-Building Model:

Address Immediate Patient Needs & Deliver Innovative Medicines



DNDi Portfolio: A Mix of Existing Drugs & NCEs

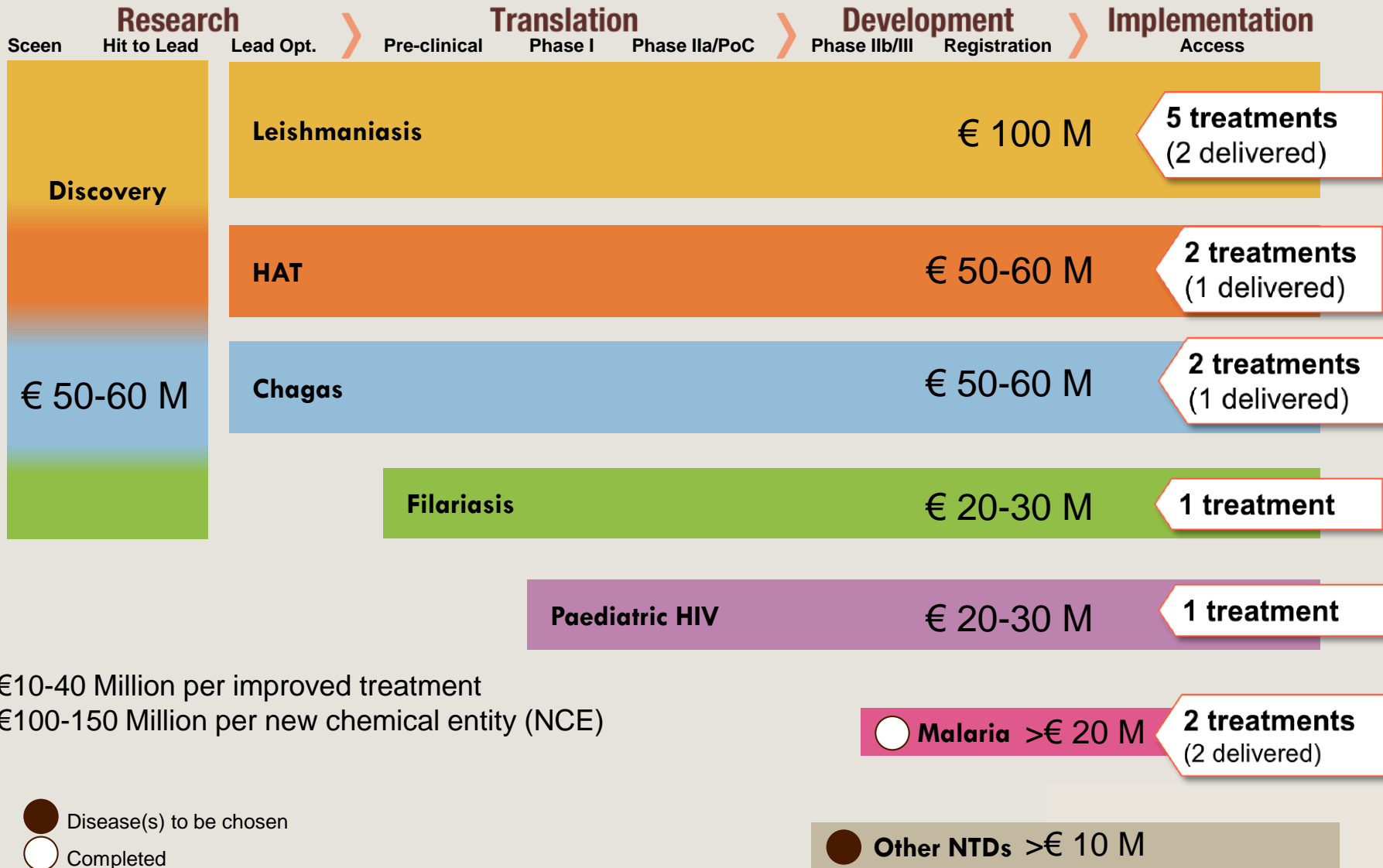
6 new treatments available and 12 new chemical entities in the pipeline



★ New Chemical Entity (NCE), Fexinidazole (for HAT and VL) = 1 NCE

Disease Scope & Level of Investment

€ 400M for 2003-2018 => 11 to 13 Treatments



Sustainable Funding

Diversification of Donors to Ensure Independence

Private Donors

- Médecins Sans Frontières (€48.2M)
- Bill & Melinda Gates Foundation (€43.5M)
- Wellcome Trust (€4.3M)
- Medicor Foundation (€2M)
- Other Private Foundations (incl. Slim, Starr, € 2.8M)

Public Donors

- United Kingdom – DFID (€38.4M)
- Netherlands – DGIS (€17M)
- France – AFD & MAEE (€14.3M)
- UNITAID (€13.1M)
- Spain – AECID (€12M)
- Switzerland – SDC & Geneva (€ 11.8M)
- Germany – KFW & GTZ (€9M)
- European Union – FP5,6,7& EDCTP (€4.4M)
- USA – NIH/NIAID (€1.8M)
- The Global Fund – AMFm (€0.5M)
- Brazil – MoH (€0.4M)



Target:
EUR
400
Million

To date:
EUR
223
Million

ASAQ

An innovative unpatented anti-malarial fixed-dose combination (FDC) pill

Innovative partnership with sanofi

- FDC developed by DNDi
- Agreement with sanofi for industrial manufacture, registration & distribution
- Non patented
- WHO prequalified, registered in 30 sub-Saharan African countries, India, Bangladesh and Colombia
- Public price: “at cost”
< US\$1 for adult, US\$0.50 for children
- Transfer of technology to Zenufa, Tanzania



Over 200 million treatments distributed

Sleeping Sickness: From Unacceptable To Better, Towards Tools for Elimination



10 years ago:
Eflornithine
Melarsoprol

Since 2009:
NECT

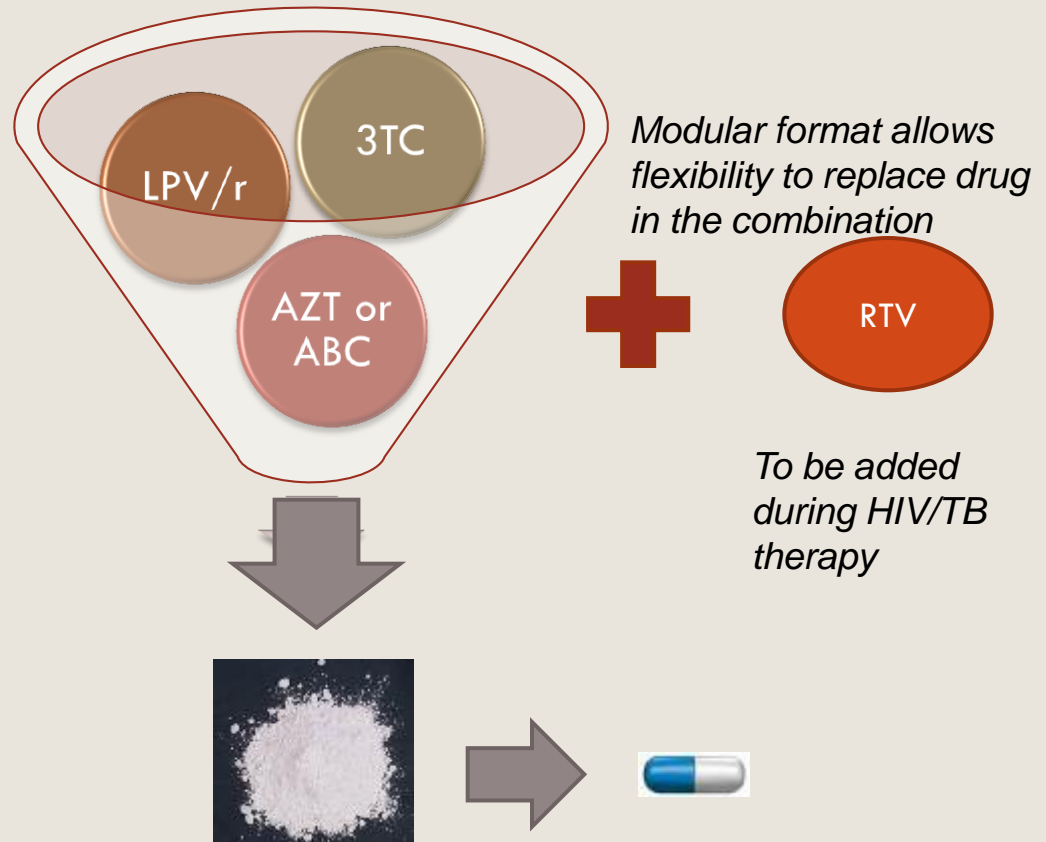
2016?

Oral treatment
& rapid
diagnostic test

Pediatric HIV: The Right Dose, The Right Taste

Target Product Profile:

- ❑ 4 products in 1: granules (FDC)
- ❑ Simply open and use with water, milk, food
- ❑ No taste
- ❑ No cold chain
- ❑ Suitable for infants (< 2 mos-3 yrs)
- ❑ TB-treatment compatible
- ❑ Affordable



4-in-1 granules in Fixed-Dose Combinations

DNDi IP Policy

- Affordable treatments / equitable access
- Develop drugs as public goods when possible
- Support follow-on research in neglected diseases
- Decisions on patents & licensing made on a case-by-case basis
- Agreements reflecting characteristics of DNDi's products:
 - Small markets, little commercial value
 - Distributed through the public sector
 - Developed in partnership

Ensuring Affordability of Treatments

Delinking R&D costs from product price

- Cost in 'target product profile' (i.e. nitroimidazoles not expensive)
- Lowest sustainable price defined in license agreement (i.e. <1\$ for ASAQ), not reflecting R&D costs
- All endemic countries included
- Non-exclusivity: competition to drive price down
- Reduction of cost of API (i.e. mefloquine with MMV)

New trends in open innovation

- ❑ Need for increased sharing of compounds, data and knowledge
- ❑ Avoid duplication, save costs, speed up R&D process & stimulate further innovation

‘Open approaches to R&D and innovation includes precompetitive research and development platforms, open source and open access schemes.’

‘Open Knowledge Innovation can be defined as research and innovation that generate knowledge which is free to use without legal or contractual restrictions.’

**WHO Expert working Group on R&D
financing & coordination**

- ⇒ GSK Open Lab
- ⇒ Open source drug discovery project (CSIR India)
- ⇒ ChEMBL-NTD
- ⇒ WIPO Re:Search,
- ⇒ Open access Malaria Box
- ⇒ Medicines Patent Pool

Access

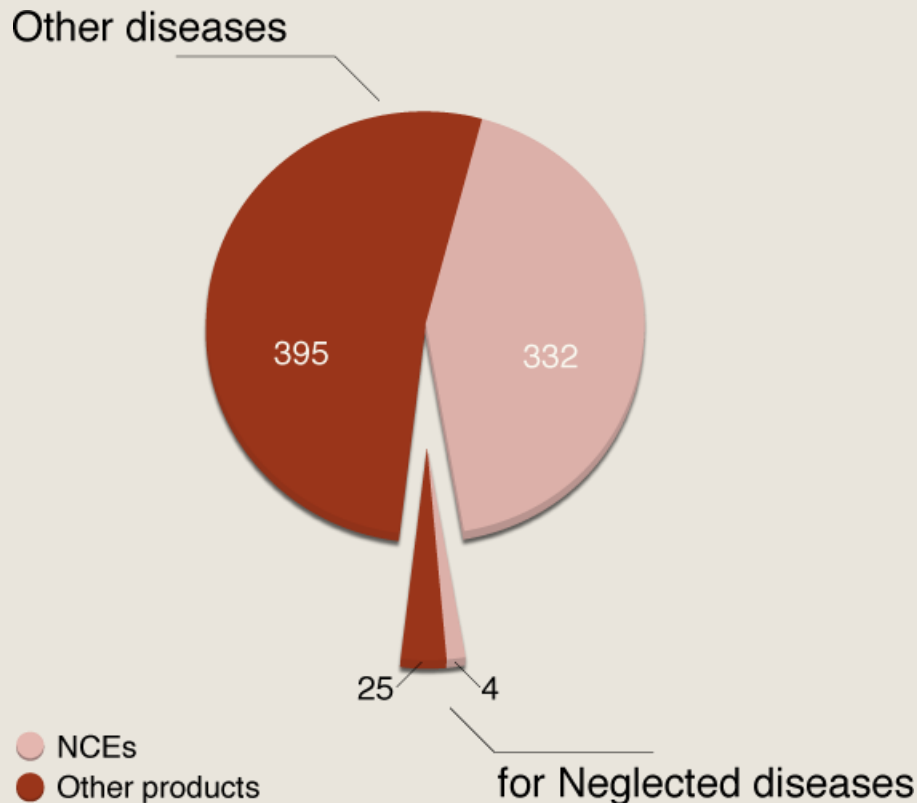
Overcoming Regulatory Barriers

- ❑ New Chemical Entities (NCEs) being developed to address specific needs of endemic countries
- ❑ Requires strong regulatory reviews by national regulatory agencies (NRAs) of endemic countries
- ❑ Increased regional collaboration and support from WHO and well-resourced regulatory agencies



Fatal Imbalance Remains Despite Progress Over A Decade

756 products developed (excluding vaccines) (2000-2011)



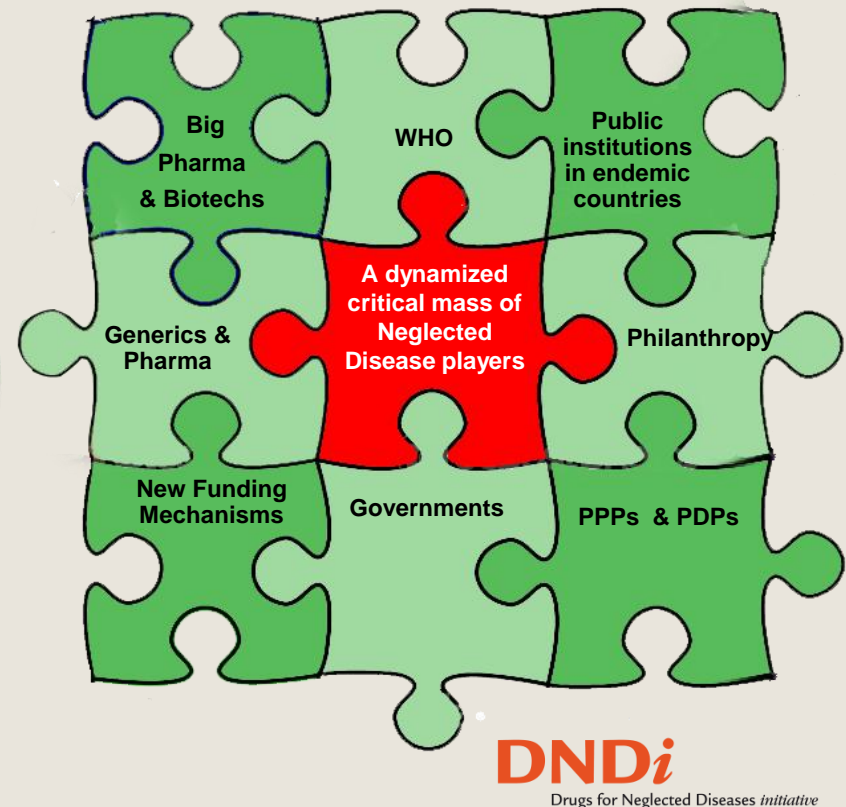
- ❑ 3.8% of new products for neglected diseases (reformulations, combinations)
- ❑ 1.2% of NCEs for neglected diseases
- ❑ Only 1.4% clinical trials (of nearly 150,000 trials) focus on neglected diseases
- ❑ Only 1% of global health investment for neglected diseases*

*Source: Mapping of available health research and development data: what's there, what's missing, and what role is there for a global observatory? Rottingen et al. *Lancet*, May 2013

Sustainable Funding

Emergence of New Sources and Mechanisms

- ❑ New countries entering the field (BRICS, endemic countries)
- ❑ New funding mechanisms: UNITAID, Financial Transaction Tax
- ❑ New incentives: Milestone prize, etc.





THANK YOU

www.dndi.org