


Technology and innovation: Changing dynamics of TB control

Karin Weyer

WHO

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Latest news

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1. New tools finally a reality
2. Universal access for all affected from TB
3. Emphasis on early case detection and treatment to cut transmission
4. Paradigm change: from DOTS to Stop TB Strategy
5. Changes in targets: from performance to impact
6. Work on socio-economic determinants for prevention and political advocacy
7. Engagement of civil society a top priority
8. Keeping the push for research and fast adoption

The global burden of TB in 2008

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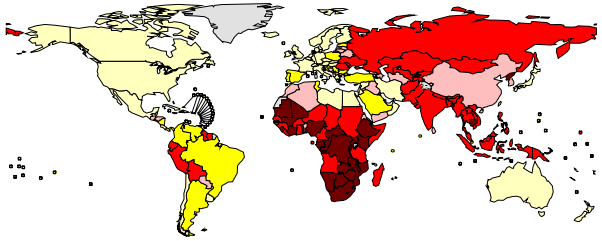

	Estimated number of cases	Estimated number of deaths
All forms of TB	9.4 million (range 8.9–9.9 million)	1.8 million (range 1.6–2.3 million)
HIV-associated TB	1.4 million (15%) (1.3–1.6 million)	520,000 (0.45–0.62 million)
Multidrug-resistant TB (MDR-TB)	440,000 (0.39-0.51 million)	150,000 (0.05–0.27 million)

(25% of HIV deaths worldwide are due to TB)

Estimated TB incidence rates, 2008

95% of cases and 98% of deaths are in developing countries

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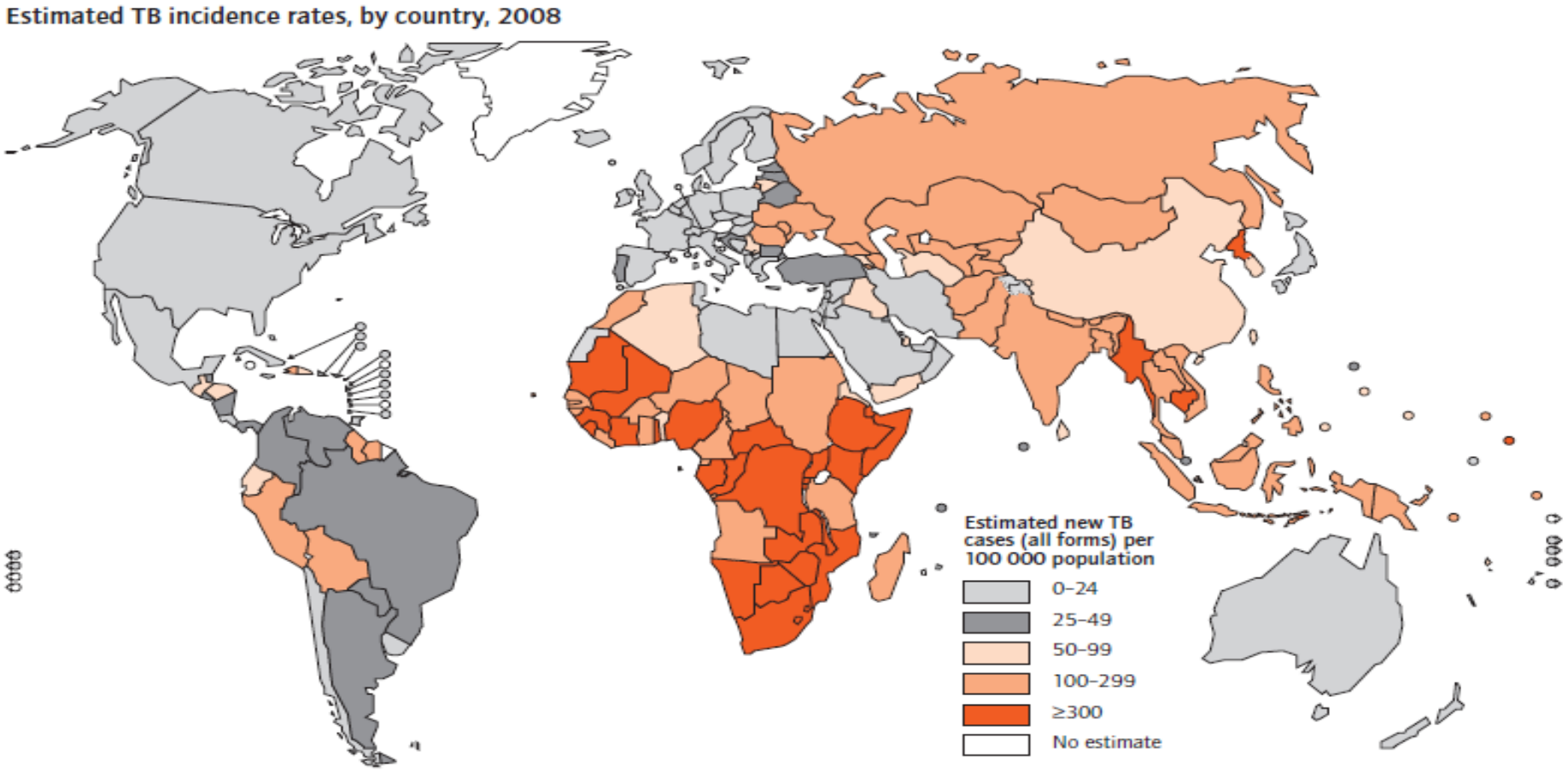

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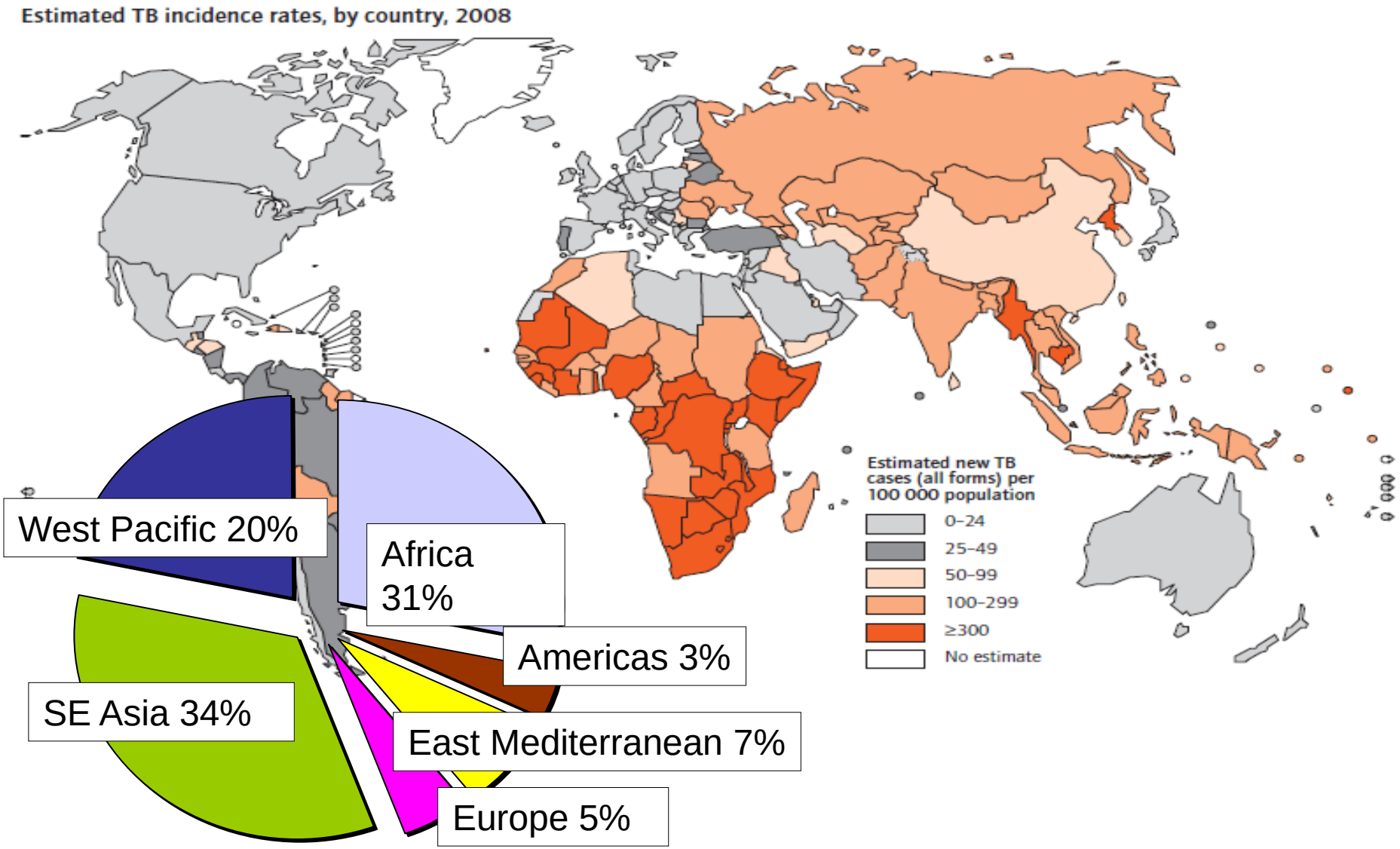

TB Control Global Targets

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UN Millennium Development Goals

2015: Goal 6: Combat HIV/AIDS, malaria and other diseases

Target 8: to have halted by 2015 and begun to reverse the incidence…

Indicator 23: incidence, prevalence and deaths associated with TB
Indicator 24: proportion of TB cases detected and cured under DOTS

Stop TB Partnership

2015: 50% reduction in TB prevalence and deaths by 2015
2050: elimination (<1 case per million population)

The global response: Stop TB Strategy & Global Plan

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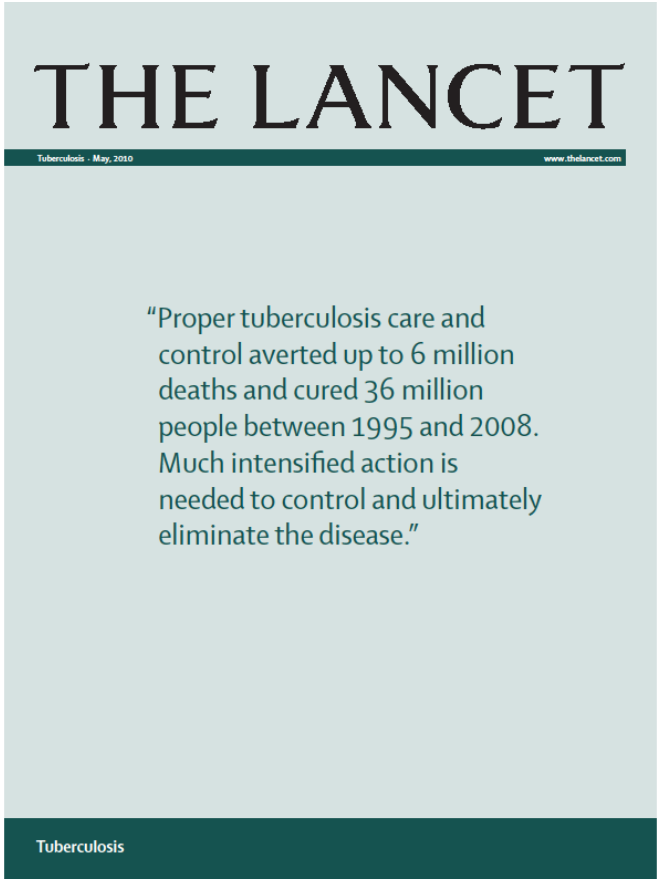
1. **Pursue high-quality DOTS expansion**
2. **Address TB-HIV, MDR-TB, and needs of the poor and vulnerable**
3. **Contribute to health system strengthening**
4. **Engage all care providers**
5. **Empower people with TB and communities**
6. **Enable and promote research**

To save lives, prevent suffering, protect the vulnerable, & promote human rights

Achievements thus far

- 36 million patients cured, 1995-2008
- 6 million deaths averted compared to 1995 care standards
- Mortality reduced by 35% since 1990
- Cure rates >85%, care for TB/HIV improving
- 50% prevalence and mortality targets on track except Africa
- MDG achieved: global TB incidence peaked in 2004
- But…. TB incidence declining too slowly, case detection stagnating; MDR-TB care only now starting scale-up



Full implementation of Global Plan

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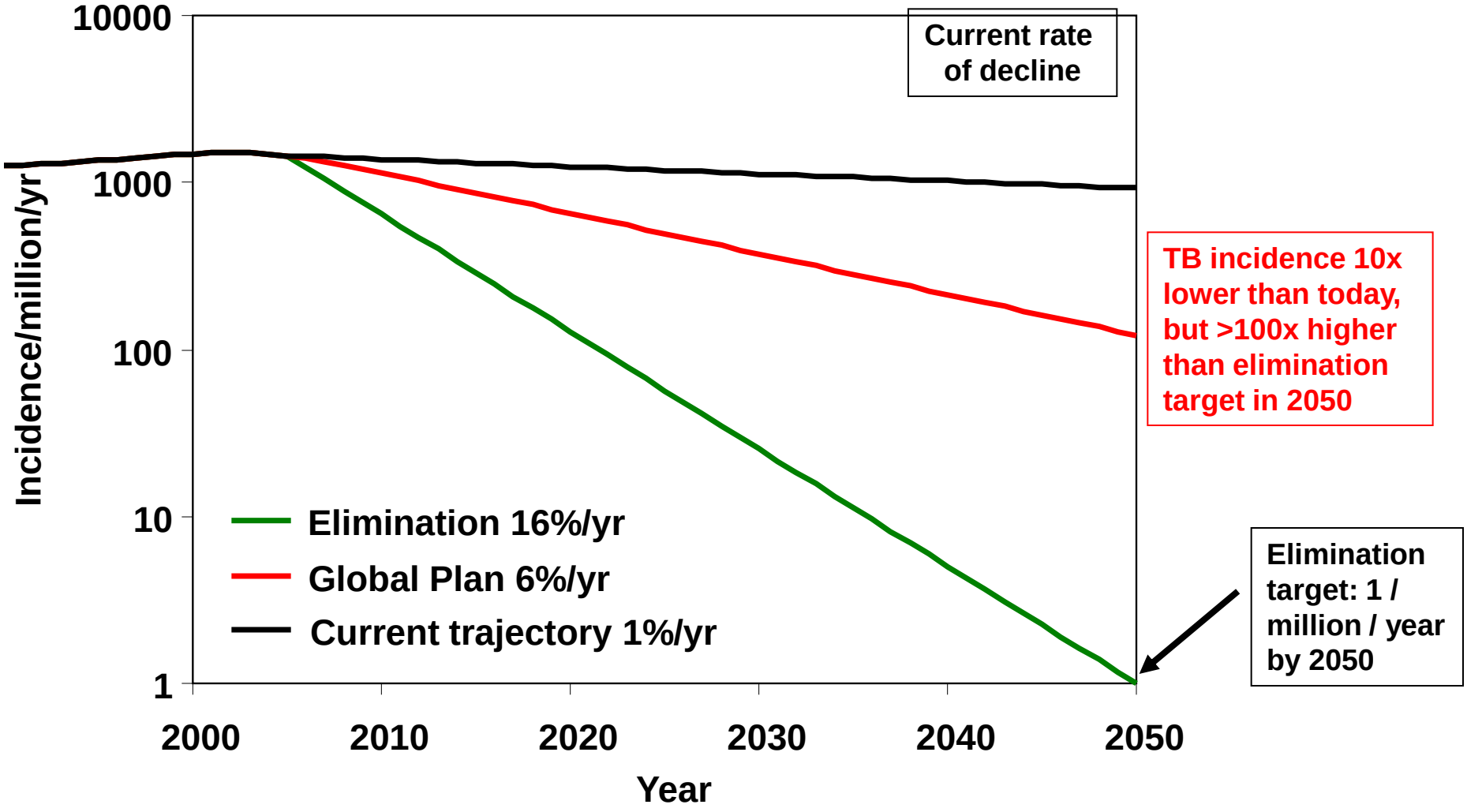
2015 MDG target reached but TB not eliminated by 2050



Incidence rates falling globally after peak in 2004, but only at <1%/year

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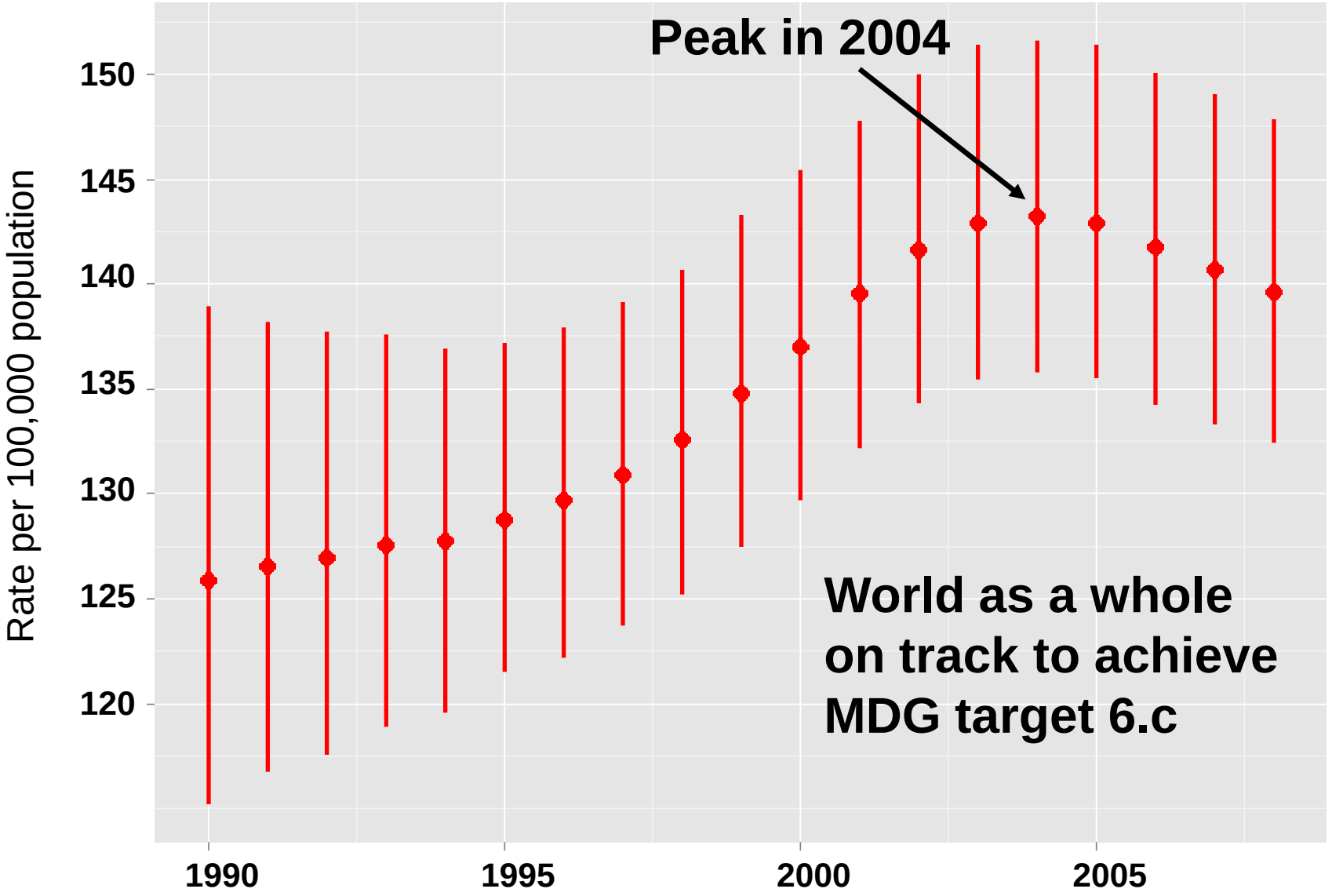
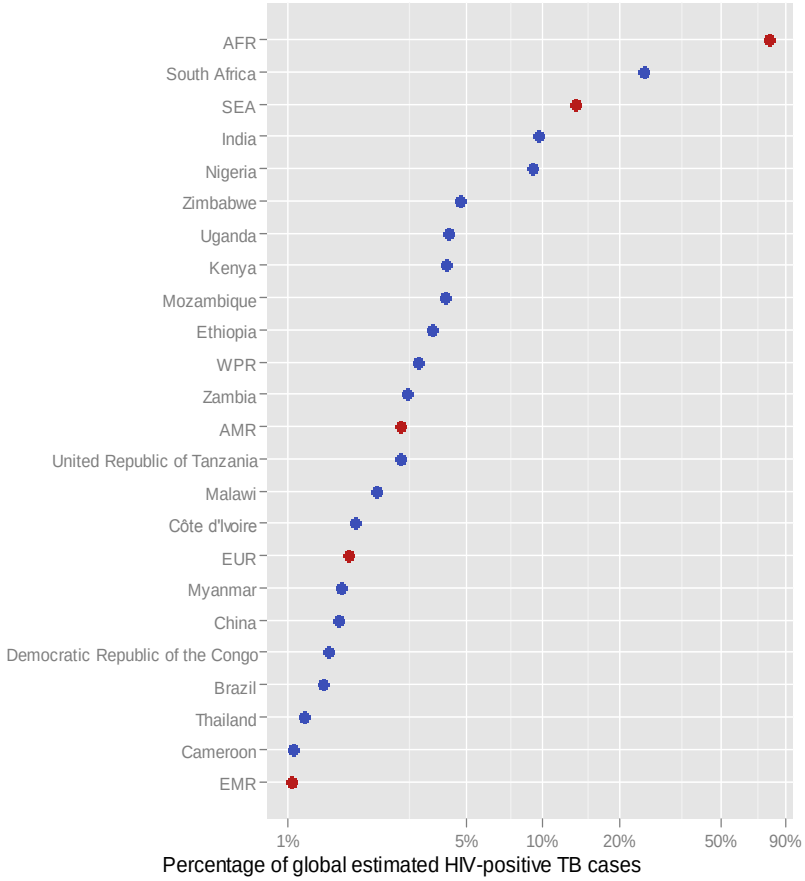
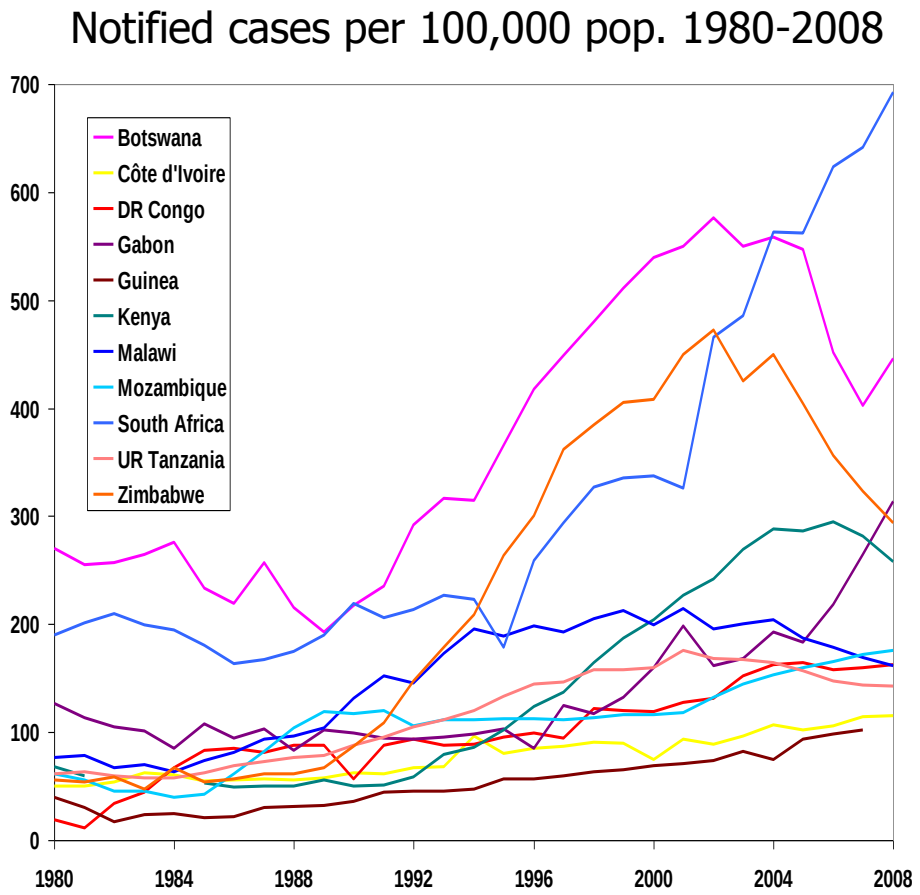


Impact of HIV on TB in Africa

- 79% of all TB/HIV cases world-wide are in Africa
- 50% of all TB/HIV cases world-wide in 9 African countries
- 23% of the estimated 2 million HIV deaths are due to TB





% MDR-TB among new TB cases, 1994-2009

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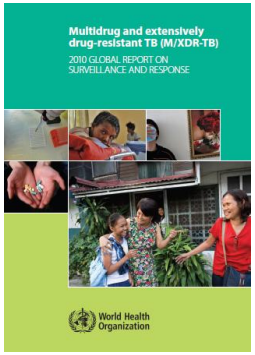
Australia, Democratic Republic of the Congo, Fiji, Guam, New Caledonia, Solomon Islands and Qatar reported data on combined new and previously treated cases.



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

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Innovative action needed in 4 spheres "Moving beyond the TB box"

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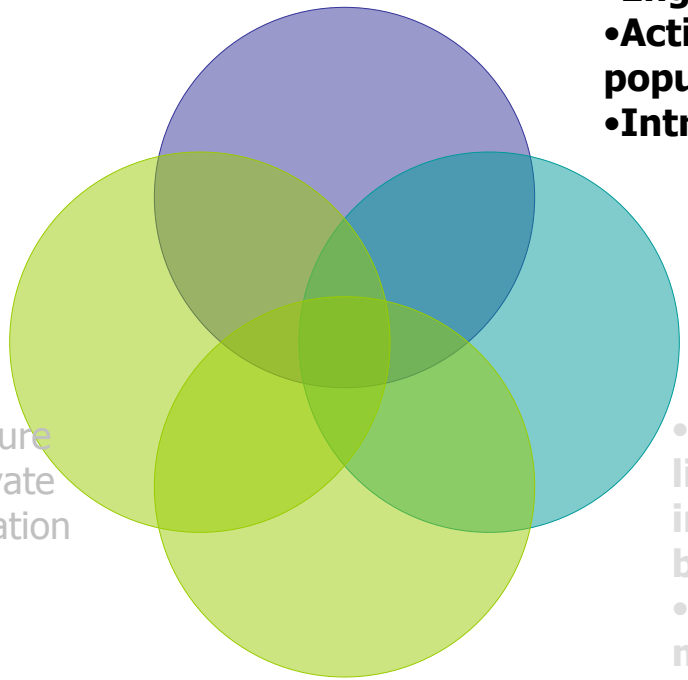
TB care and control

- Early & increased case detection
- Scale-up TB/HIV and MDR-TB interventions
- M&E and impact measurement
- Engage all care providers
- Active screening among at-risk populations
- Introduction of modern technology



Health systems and policies

- Close NTP funding gaps
- Provide free services, ensure quality drugs, regulate private care, better M&E, collaboration on co-morbidities

Development agenda

- Socio-economic factors: living conditions, food insecurity, awareness, risk behaviour, access to care
- Reduce costs to patients to minimise impoverishment
- Secure political commitment and civil society awareness & mobilization

Research *sensu lato*

- Target new tools
- Operational research and transfer of technology

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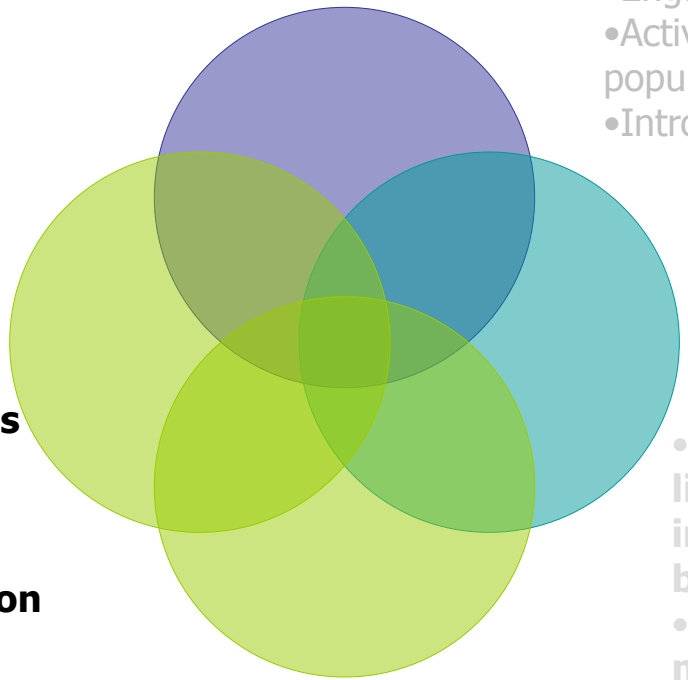

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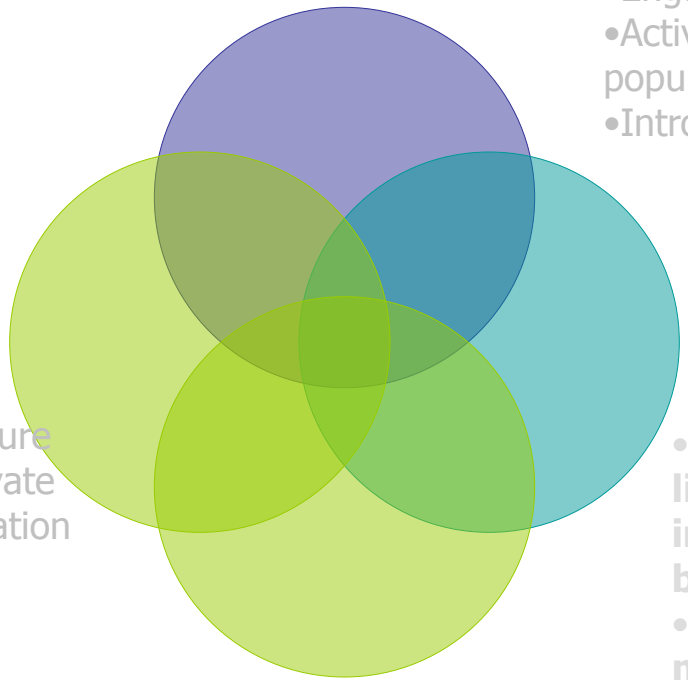

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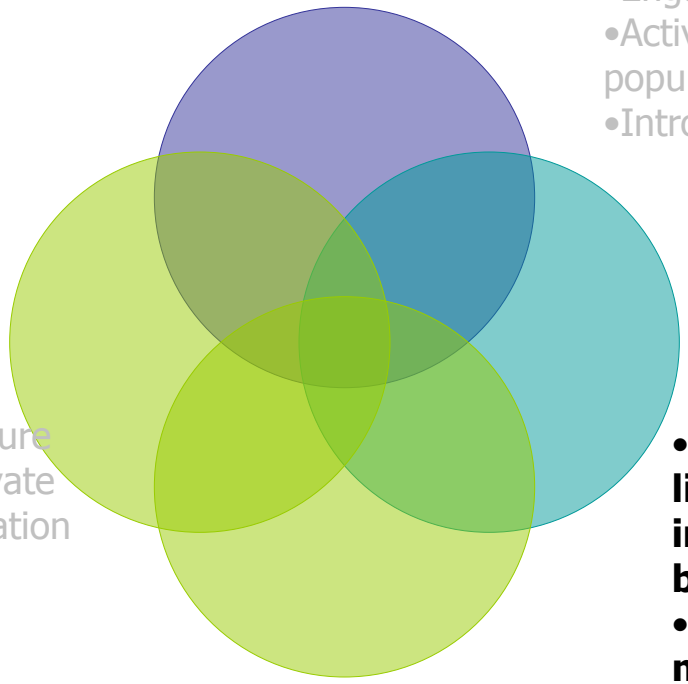

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WHO core functions in global TB control and research

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1. Development of policy, norms and standards
2. Technical support to countries and its coordination
3. Monitoring & evaluation
4. Fostering partnerships and alliances
5. Promoting research

Focus on key priorities in each area given constrained resources

WHO core functions, comparative advantage and upcoming priorities

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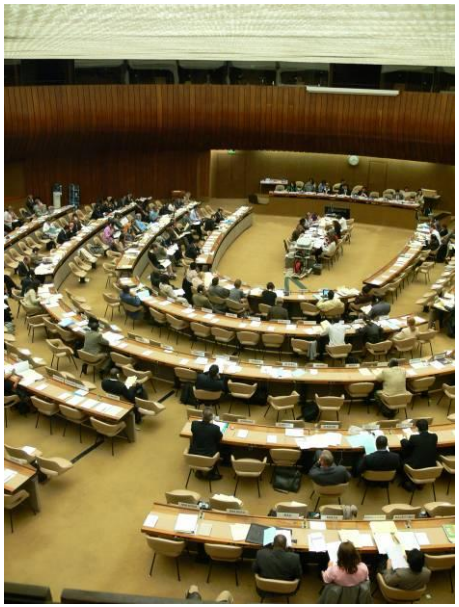
1. **Development of policy, norms and standards with the aim of universal access to care for all**
   - Through the WHA, the Strategic and Technical Advisory Group for Tuberculosis (STAG-TB), ad-hoc Expert Committees and with support from Stop TB Partnership Working Groups
   - New rapid diagnostics, laboratory standards, and drugs policies/guidelines revision
   - Revision of MDR-TB management guidelines and TB/HIV policy
   - Policies regarding co-morbidities & social determinants
   - Ethics and human rights guidance



WHO core functions, comparative advantage and upcoming priorities

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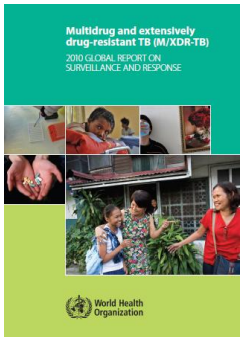
2. Technical support to countries and its coordination

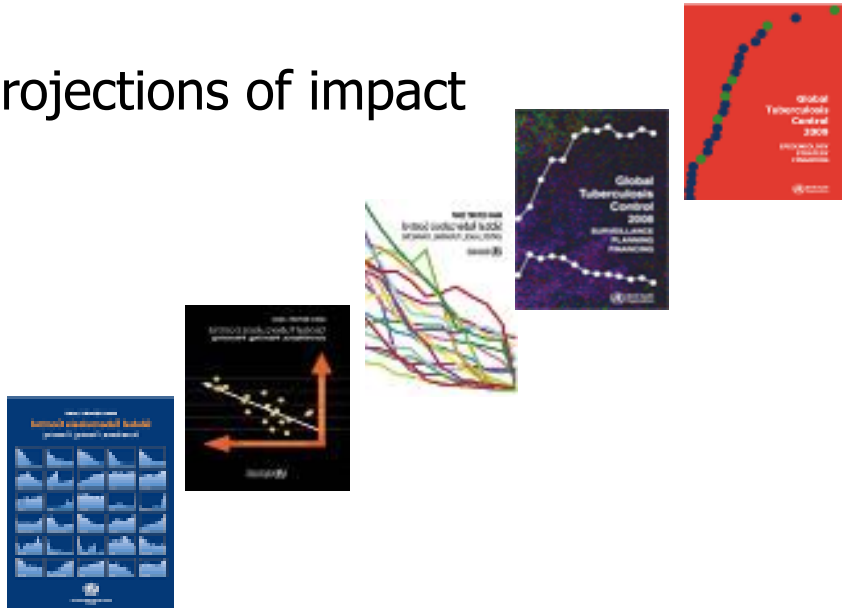
- GLI/EXPAND-TB/SRL network to strengthen laboratories and introduce rapid diagnostics
- New architecture for scaling-up MDR-TB response
- TB-HIV interventions scale-up
- Quality DOTS access for vulnerable populations and earlier case detection
- Community care expansion
- Coordinated mechanisms (GLI, TBTEAM) providing technical assistance and resource mobilization

WHO core functions, comparative advantage and upcoming priorities

3. Monitoring & evaluation

- Annual Global TB Control Report: epidemiology, achievements of control, progress towards targets, financing for all countries
- MDR-TB drug resistance surveillance – 114 countries
- Impact Measurement – coordination of TA for prevalence surveys (21 countries) and special studies
- Stop TB Global Plan update and projections of impact
- Joint donor/technical reviews





WHO core functions, comparative advantage and upcoming priorities

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4. Fostering partnerships and alliances

1. TB network at all three levels of WHO
2. Hosting the Stop TB Partnership
3. Providing the Secretariat for Stop TB working groups
    - GLI/EXPAND-TB/SRLN
    - DOTS Expansion
    - TB/HIV Working Group
    - MDR-TB Working Group
4. Partnering with the HIV community
5. Reaching out to NCD, MCH etc.

WHO core functions, comparative advantage and upcoming priorities

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5. Promoting research

- Pursuing the TB Research Movement that aims at a comprehensive, consensus agenda and at monitoring investments
- Interacting with the broad health research initiatives to ensure TB is prominent
- Facilitating operational research at programme level to ensure rapid uptake of new tools

Diagnostics acceleration

- **At least 20 new technologies in various stages of development and evaluation**
- **Distinct target areas for drug-resistant TB being addressed**
- **WHO policy formulation***
  - **Liquid culture, rapid speciation and line probe assays, 2007-2008**
  - **LED microscopy, selected non-commercial culture and drug susceptibility testing methods, 2009**
  - **IGRAs, commercial serodiagnostics, Xpert MTB-RIF, 2010**
- **Expanded access to new diagnostics and laboratory strengthening (EXPAND-TB, GLI partners)**

*Available at: http://www.who.int/tb/dots/laboratory/policy/en

WHO policies 2007-2010

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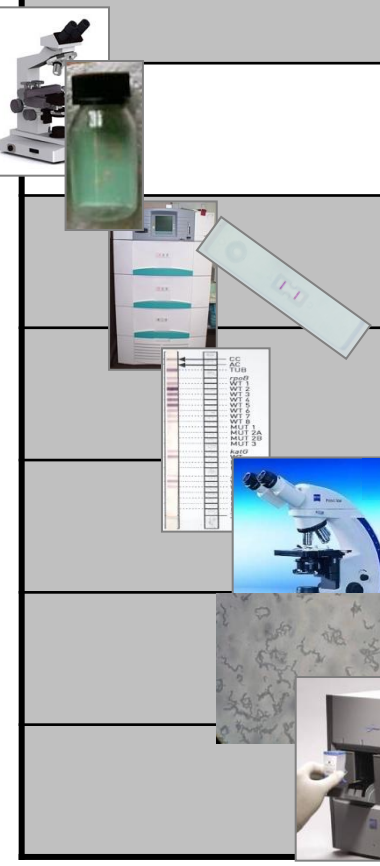
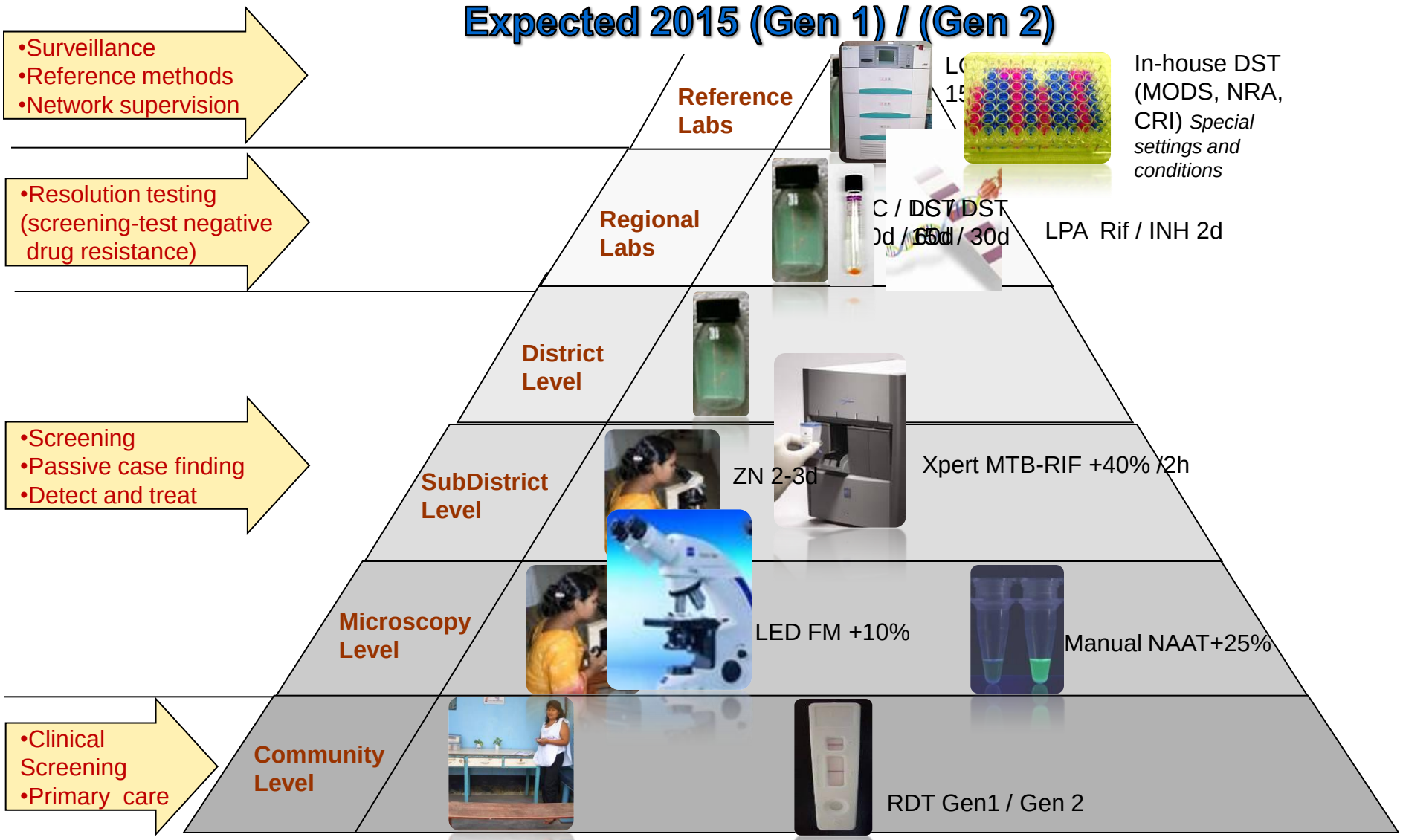
a) early diagnosis & care; b) smear-negative TB; c) rapid MDR/XDR detection

Year	Technology	Turnaround time	Sensitivity gain
Before 2007	ZN microscopy Solid culture	2-3 days 30-60 days	Baseline
2007	Liquid culture / DST Rapid speciation	15-30 days	+10% compared to LJ
2008	Line Probe Assay (1st line, R & H)	2-4 days	At this time for S+ only
2009	LED-based FM	1-2 days	+10% compared to ZN
Conditional 2009	In-house DST (MODS, CRI, NRA)	15-30 days	1st line only
Expected 2010	Automated NAAT (TB, R)	90 minutes	+40% compared to ZN



Integrating new tools in tiered health systems



Technology platforms provide increasing cost-effectiveness

Technology	"Menu"
Regional Laboratories 	1. TB R/H resistance 2. TB FQs/Injectables resistance 3. EID/HIV
District/Subdistrict Laboratories 	1. TB R resistance 2. TB FQsIInjectables resistance 3. STD 4. Viral load HIV 5. Others: Hepatitis B/C
Microscopy Centres 	1. TB 2. Malaria 3. HAT 4. EID/HIV
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New diagnostics changing TB control dynamics

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- Changes in diagnostic and screening algorithms
- Increased capacity needed to treat TB and MDR-TB
- Need to re-define TB case and outcome definitions
- Monitoring of impact on case detection and cure
- Resource awareness by donors/funders
- Use in non-traditional TB settings (HIV, private sector)
- Impact on GLI strategic priorities 2011-2015
- Innovative new partnerships needed

Acknowledgements

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'Labs: From unimaginable…to indispensable'

Mario Raviglione
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Paul Nunn

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GLI Partners
WHO Expert Groups
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