



# Health Systems Dynamics and Strengthening

MSc IBE

Concepts in Epidemiology 2009

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# Learning objectives

- Understand what system-level interventions are and how powerful they can be;
- See how synergies of multiple-interventions can be harnessed;
- Introduction to systems thinking;
- Be able to raise questions about health systems concepts.



## Typical health system status (Africa)

- Systems inadequate
- <\$20 per capita/year
- Poor health levels
- Poor quality
- Dissatisfaction
- Technical inefficiency
  - Doing things right
- Allocative inefficiency
  - Doing the right things
- Dynamic inefficiency
  - Doing new things
- Low health risk protection
- Low financial risk protection
- High out-of-pocket payments
- Poor equity of access
- Poor equity of outcomes
- New diseases





## Major factors influencing current health systems at country level

- Health sector reforms
- Decentralization
- Sector-wide approach (SWAp)
- Debt relief and Poverty Reduction Strategies
- Integration
- Public: private alliances
- Millennium Development Goals
- Global Health Initiatives (GFATM, GAVI, etc.)



# Importance of the district health system

## The District is.....

- target of decentralization
- target of SWAp baskets
- lowest level for plans and budgets
- lowest level with full range of facilities (Hospital, etc)
- employer of public health services
- level for system administration, health boards, etc.
- concentration point for health information
- where we get traction for change
- large enough to see intra-country disparities

**Ignored at our peril**



# District health priorities and malaria

## Example from Tanzania

### Malaria in 1999 ...

- First cause of < 5 admissions 49%
- First cause of  $\geq 5$  admissions 33%
- First cause of death for < 5 admissions 34%
- First cause of death for  $\geq 5$  admissions 23%
- First cause of < 5 outpatients 36%
- First cause of  $\geq 5$  outpatients 31%
- First cause of all outpatients in all 20 Regions 24% - 49%



## District health priorities and malaria

### Example from Tanzania

Is this low priority also reflected in district budgets for malaria? **Yes**

Table A1 Normative Ranking of Health Service Categories for Budgeting

Rank	Family Planning		MCH		STDs		HIV/AIDS		Tuberculosis		Malaria		Other	
	N	Pct	N	Pct	N	Pct.	N	Pct	N	Pct.	N	Pct	N	Pct
1	3	3.9	23	29.9	7	9.1	1	1.3	5	6.5			38	49.4
2	9	11.7	27	35.1	32	41.6			3	3.9	1	1.3	4	5.2
3	11	14.3	19	24.7	20	26.0	1	1.3	7	9.1	1	1.3	18	23.4
4	26	33.8	6	7.8	14	18.2	6	7.8	10	13.0	3	3.9	12	15.6
5	11	14.3	0	0.0	4	5.2	37	48.1	11	14.3	11	14.3	3	3.9
6	8	10.4	1	1.3			19	24.7	30	39.0	17	22.1	2	2.6
7	9	11.7	1	1.3			13	16.9	11	14.3	44	57.1		
Total	77	100.0	77	100.0	77	100.0	77	100.0	77	100.0	77	100.0	77	100.0
Average Rank	4.2		2.2		2.7		5.4		5.0		6.3		2.3	
Pct. In Top 3	29.9		89.6		76.6		2.6		19.5		2.6		77.9	

Source: PEPFAR Management Information System Subcommittee of the Strategic Information Workstream. Strategic Information Plan: Developing Facility-based Management Information Systems. 1-19. 2004. Office of the United States Global AIDS Coordinator.



## District health priorities and malaria

### Example from Tanzania

Yet in the same year (1999)...

In a DHS Health Facility Survey of 77 of Tanzania's 120 District Health Management Teams...

*“Malaria was considered to be a low priority, in fact it was ranked as the lowest priority – not a single DHMT ranked the disease as the most important health area, while close to 60% ranked it as the least important area.”*

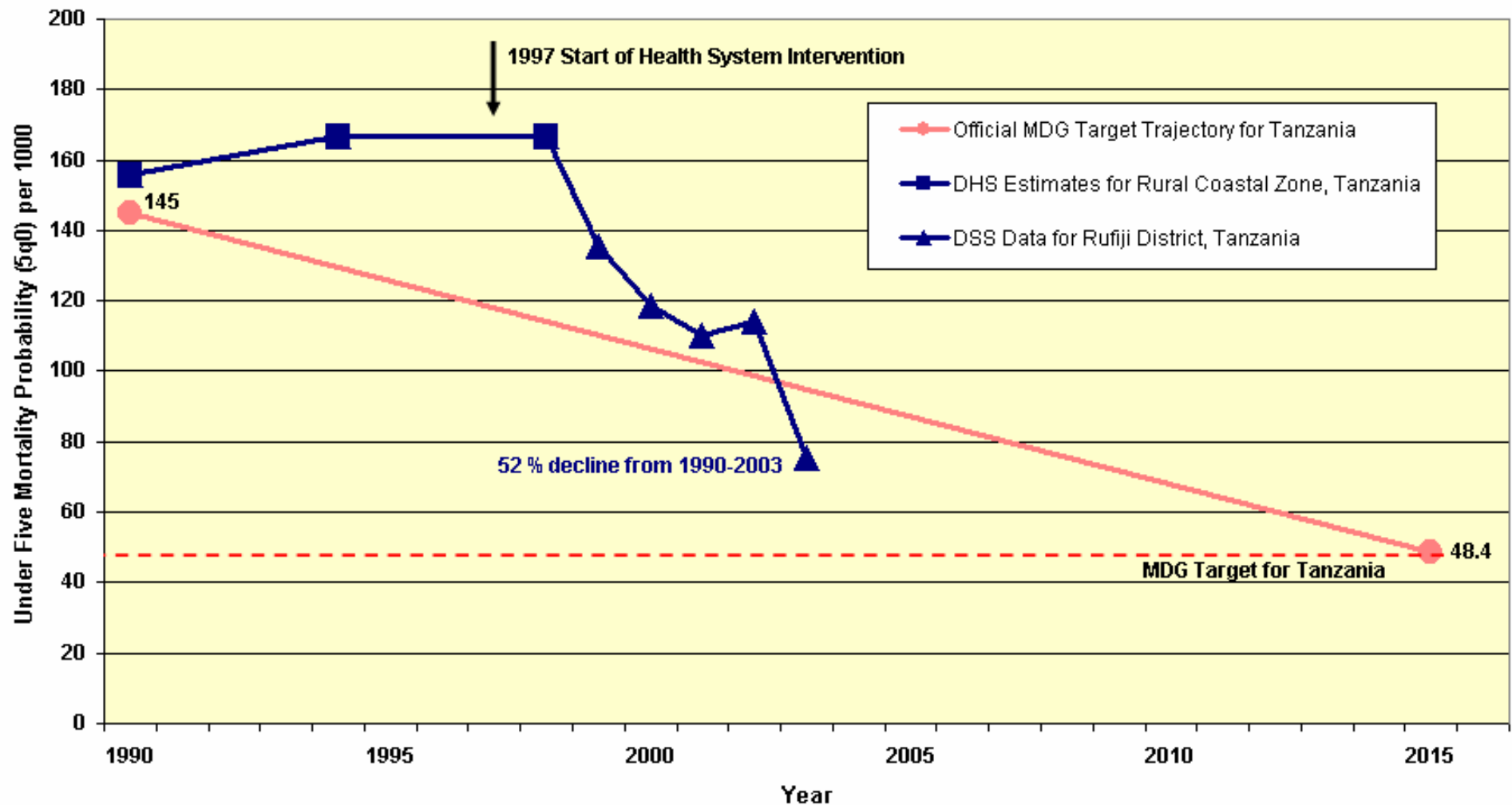
Source: Hutchison (2002). Decentralization in Tanzania:  
The view of District Health Management Teams, Measure Evaluation, Calverton, MD.



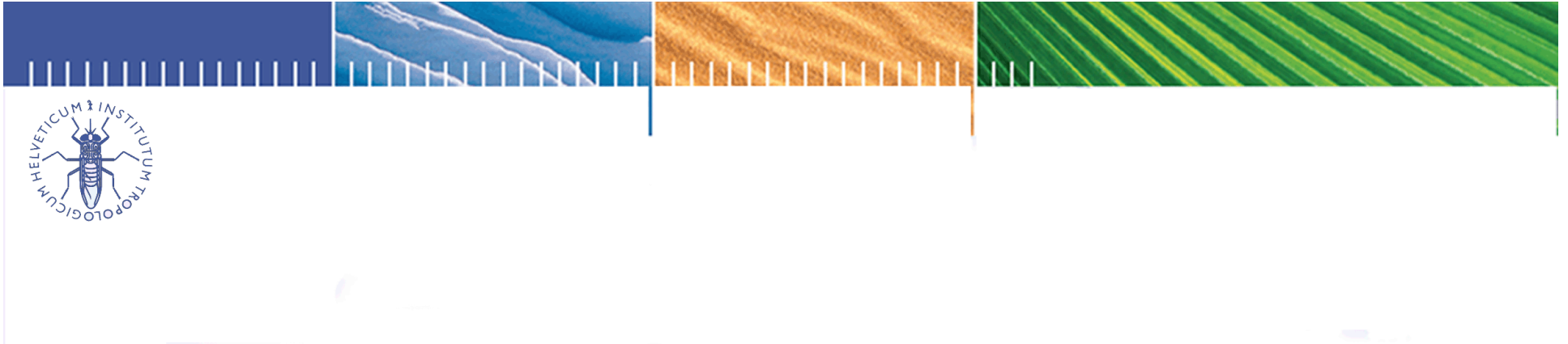


# Impact of health system interventions

## District level



Source: de Savigny et al (2004)

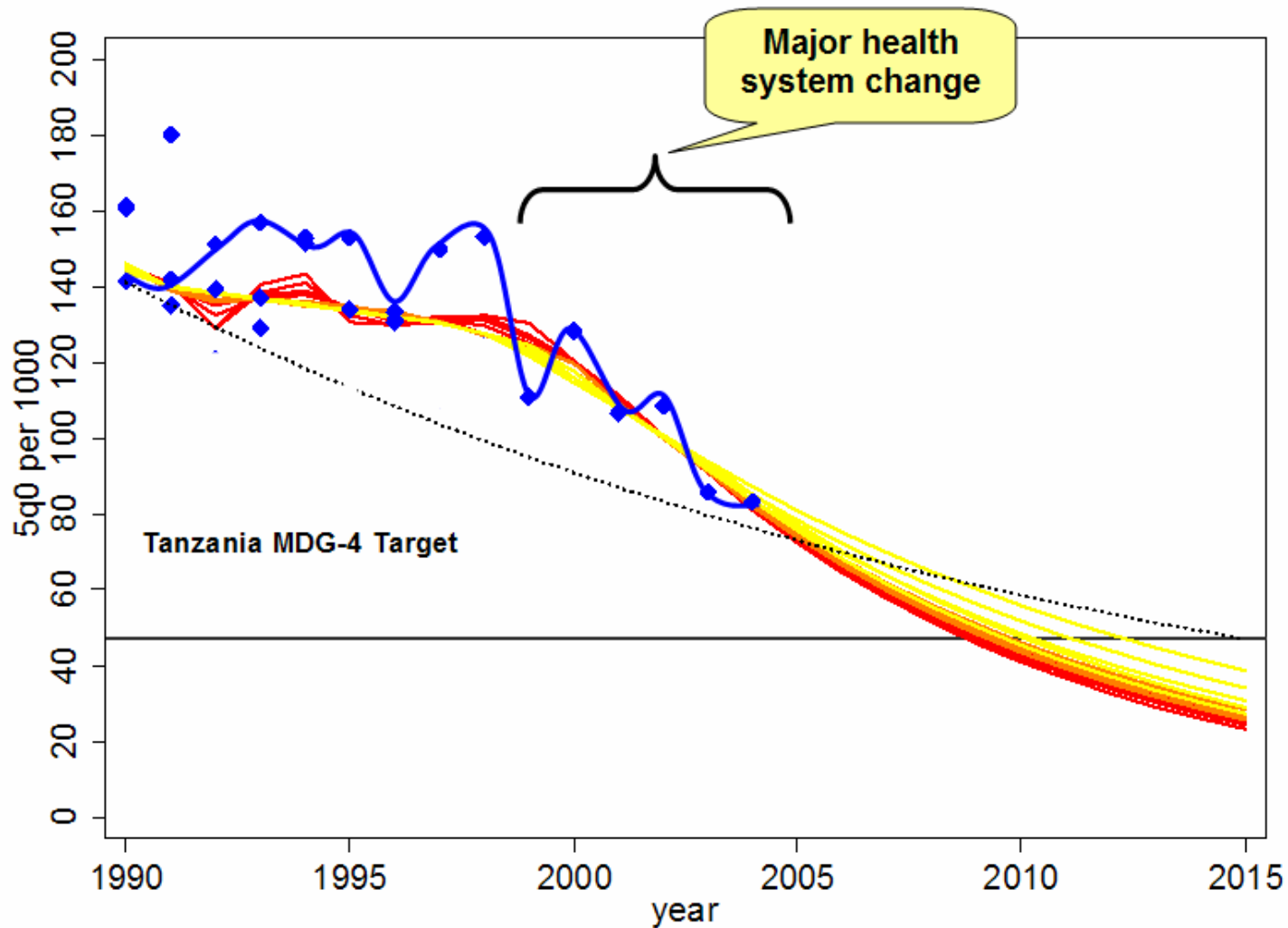


**But can district demonstrations be scaled to national level?**





## National under-5 mortality: Can the trajectory change?





*The future is not what it used to be.*

Paul Valery, French critic and poet (1871 – 1945)



## Four revolutions

*“There are four revolutions currently underway that will transform health and health systems. These are:*

- *Life sciences*
- *Information and communication technology*
- *Social justice and equity; and*
- *Systems thinking to transcend complexity”*



## Four revolutions

*“There are four revolutions currently underway that will transform health and health systems. These are:*

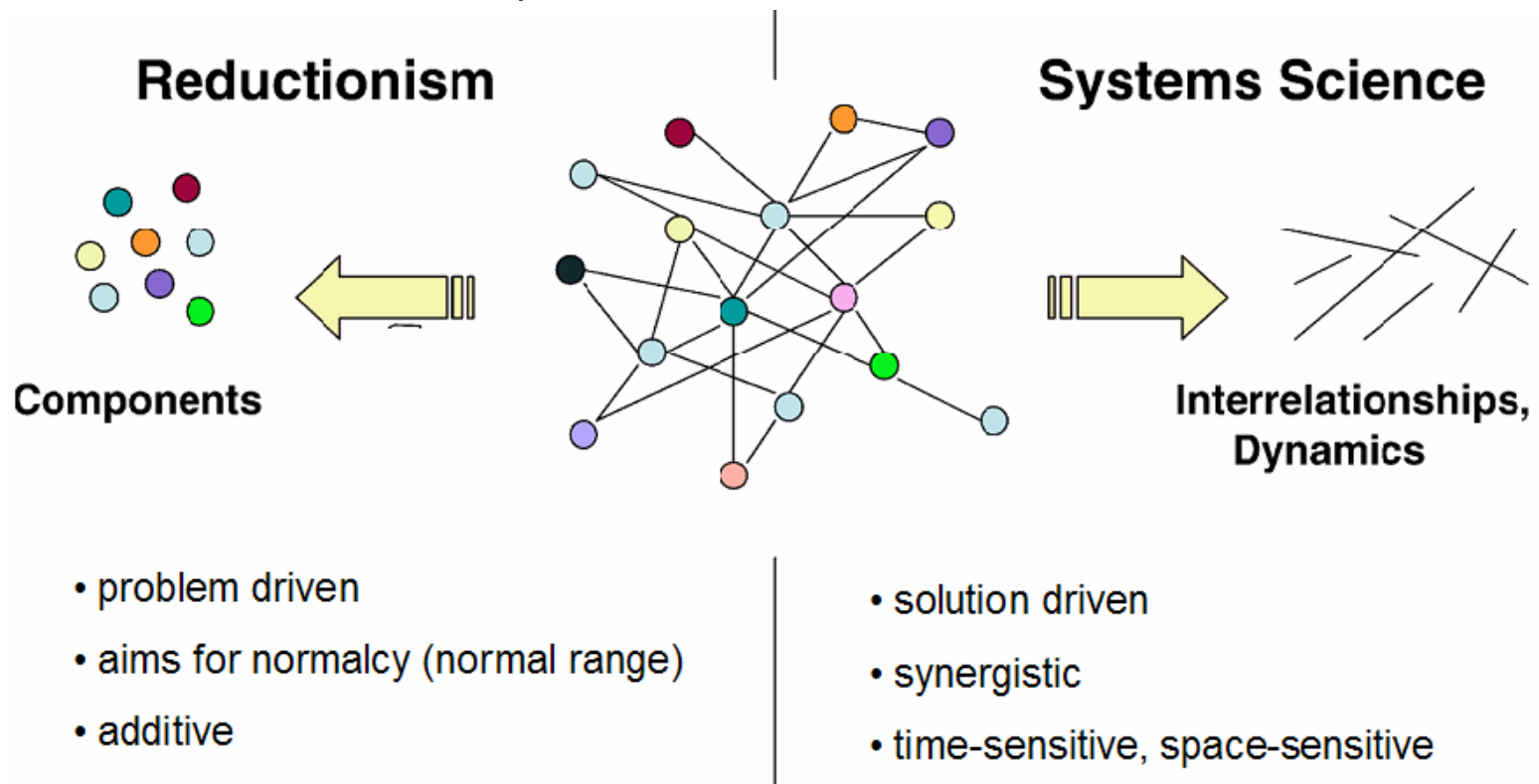
- *Life sciences*
- *Information and communication technology*
- *Social justice and equity; and*
- ***Systems thinking to transcend complexity”***



# Systems thinking

Systems thinking gives new insights into:

- how a system works,
- why it has problems,
- how it can be improved



# System thinking skills

<b>Usual approach</b>	<b>Systems thinking approach</b>
<b>Static thinking</b>	<b>Dynamic thinking</b>
focus on events	focus on patterns of behaviour
<b>Systems as effect</b>	<b>Systems as cause</b>
behaviour as externally driven	responsibility for behaviour from internal actors and rules
<b>Tree-by-tree thinking</b>	<b>Forest-thinking</b>
knowledge from understanding details	knowledge from understanding contexts of relationships
<b>Factors thinking</b>	<b>Operational thinking</b>
concentrating on factors that influence or correlate	concentrating on causality and how behaviour is generated
<b>Linear thinking</b>	<b>Loop thinking</b>
view causality running in one direction	View causality as an on-going process with feedback influencing causes

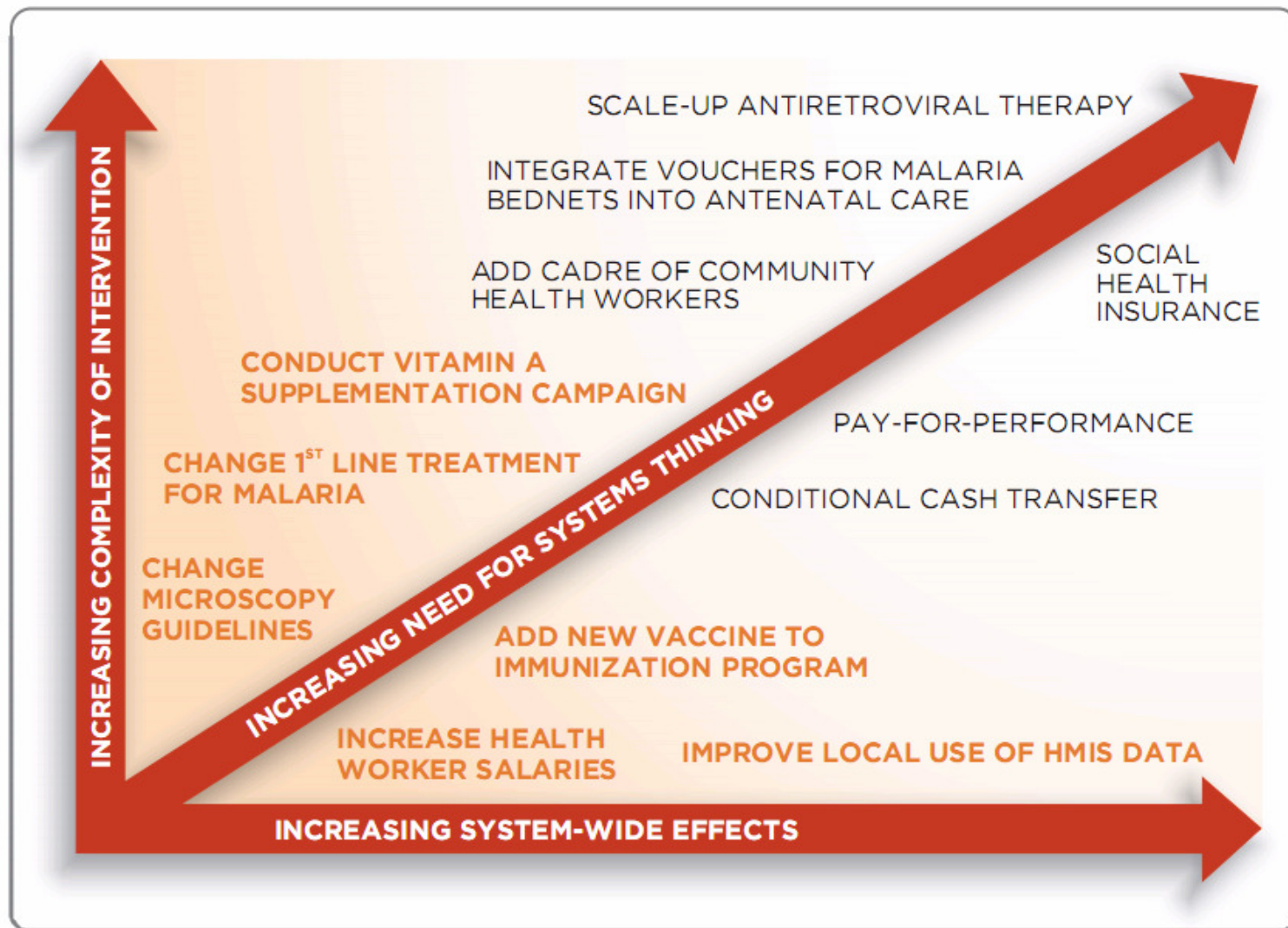


# System thinking elements

<b>Systems organizing</b>	<ul style="list-style-type: none"><li>• managing and leading in the system</li><li>• rules that govern the system</li><li>• regulations, boundary setting, permissions, incentives</li></ul>
<b>Systems networks</b>	<ul style="list-style-type: none"><li>• understanding and managing web of system stakeholders</li><li>• includes individuals and institutions</li></ul>
<b>Systems dynamics</b>	<ul style="list-style-type: none"><li>• modeling and understanding dynamic change</li><li>• understanding organizational structure</li><li>• how structure influences behaviour of the system</li></ul>
<b>Systems knowledge</b>	<ul style="list-style-type: none"><li>• managing content and infrastructure</li><li>• understanding role of information flows</li><li>• using feedback chains and evidence to drive system</li></ul>



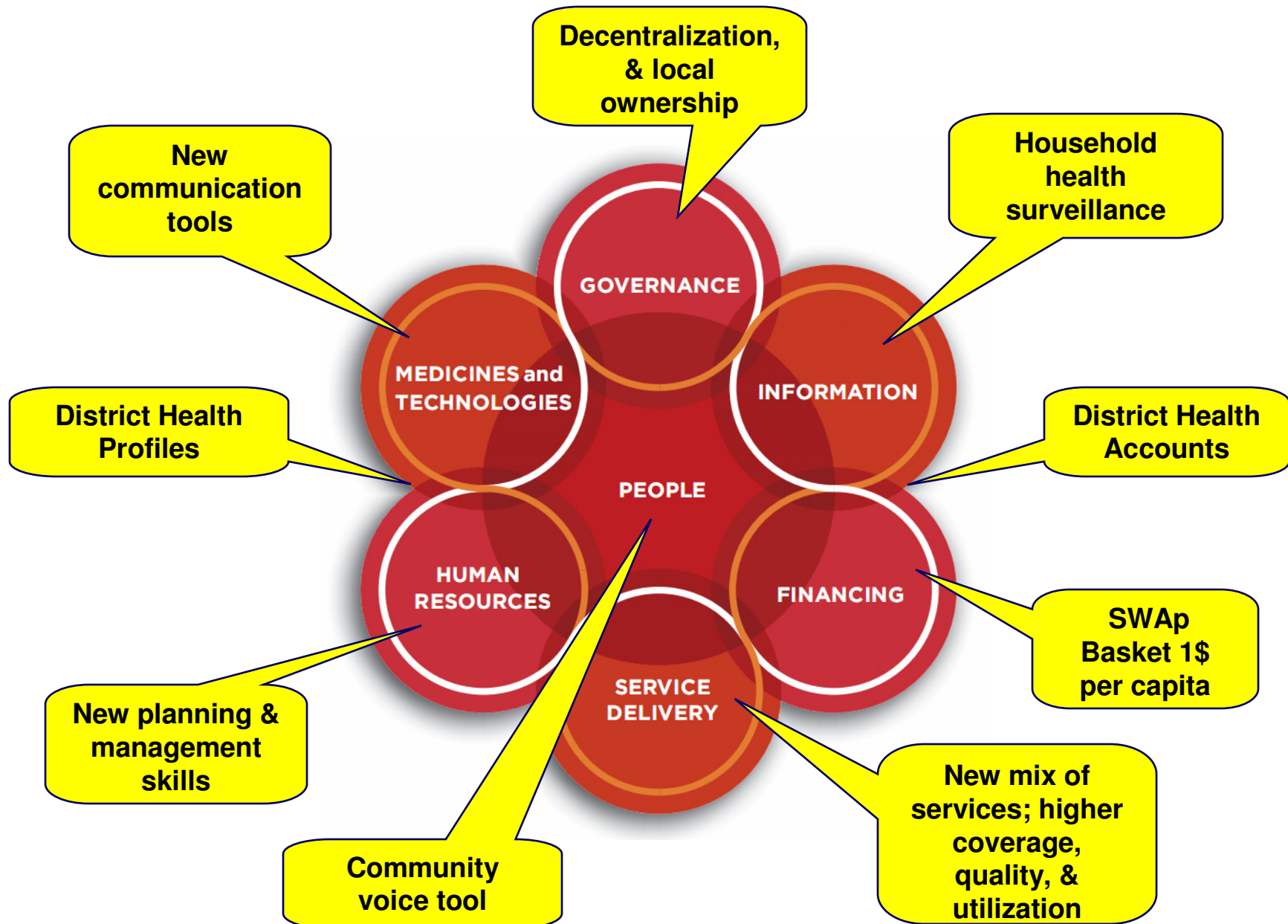
## All interventions have system-wide effects



## Typical system-level interventions

Building block	Common types of interventions
Governance	<ul style="list-style-type: none"> <li>- Decentralization</li> <li>- Civil society participation</li> <li>- Licensure, accreditation, registration</li> </ul>
Financing	<ul style="list-style-type: none"> <li>- User fees</li> <li>- Conditional cash transfers (demand side)</li> <li>- Pay-for-performance (supply side)</li> <li>- Health insurance</li> <li>- Provider financing modalities</li> <li>- Sector Wide Approaches (SWAps) and basket funding</li> </ul>
Human Resources	<ul style="list-style-type: none"> <li>- Integrated Training</li> <li>- Quality improvement, performance management</li> <li>- Incentives for retention or remote area deployment</li> </ul>
Information	<ul style="list-style-type: none"> <li>- Shifting to electronic (versus manual) medical records</li> <li>- Integrated data systems &amp; enterprise architecture for HIS design</li> <li>- Coordination of national household surveys (e.g. timing of data collected)</li> </ul>
Medical products, vaccines and technologies	<ul style="list-style-type: none"> <li>- New approaches to pharmacovigilance</li> <li>- Supply chain management</li> <li>- Integrated delivery of products and interventions</li> </ul>
Service delivery	<ul style="list-style-type: none"> <li>- Approaches to ensure continuity of care</li> <li>- Integration of services versus centrally managed programmes</li> <li>- Community outreach versus fixed clinics</li> </ul>
Multiple building blocks	<ul style="list-style-type: none"> <li>- Health sector reforms</li> <li>- District health system strengthening</li> </ul>

# Synergy of connected health system interventions



Source: MOHSW TEHIP Tanzania



# Towards a new universalism

Coverage of interventions under differing health system notions

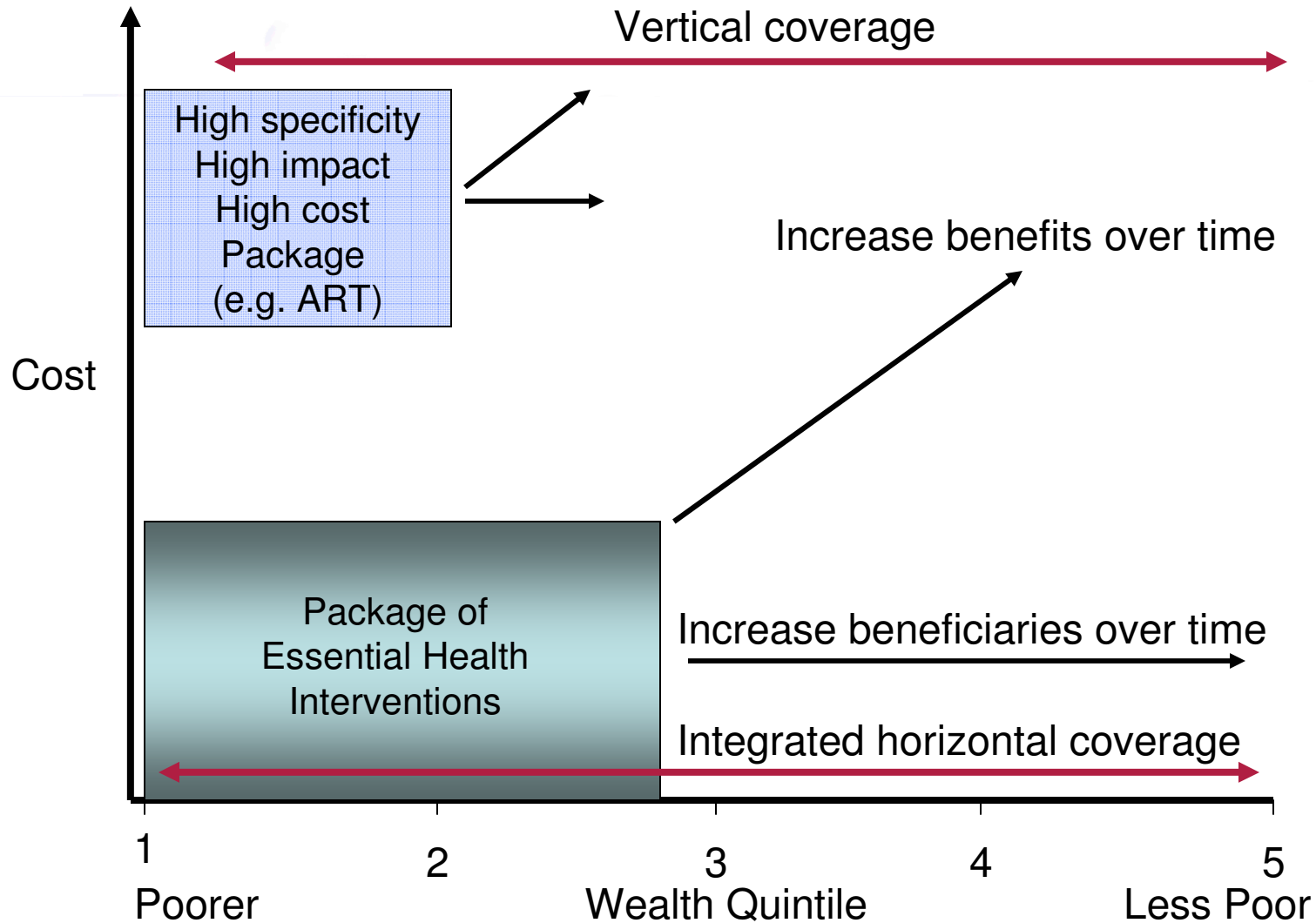
Interventions	Population covered	
	Everyone	Only the poor
Basic (simple)	Original concept	"Primitive" health care
Minimum essential	New universalism <b>80%</b>	Selective PHC
Everything	Classical universalism	Never seriously contemplated

Diagram illustrating the evolution of health system notions and their coverage of interventions:

- Original concept** (Basic (simple) interventions, Everyone) evolves into **"Primitive" health care** (Only the poor).
- "Primitive" health care** evolves into **Selective PHC** (Only the poor).
- Selective PHC** evolves into **New universalism** (Everyone, **80%** coverage).
- New universalism** evolves into **Classical universalism** (Everyone).

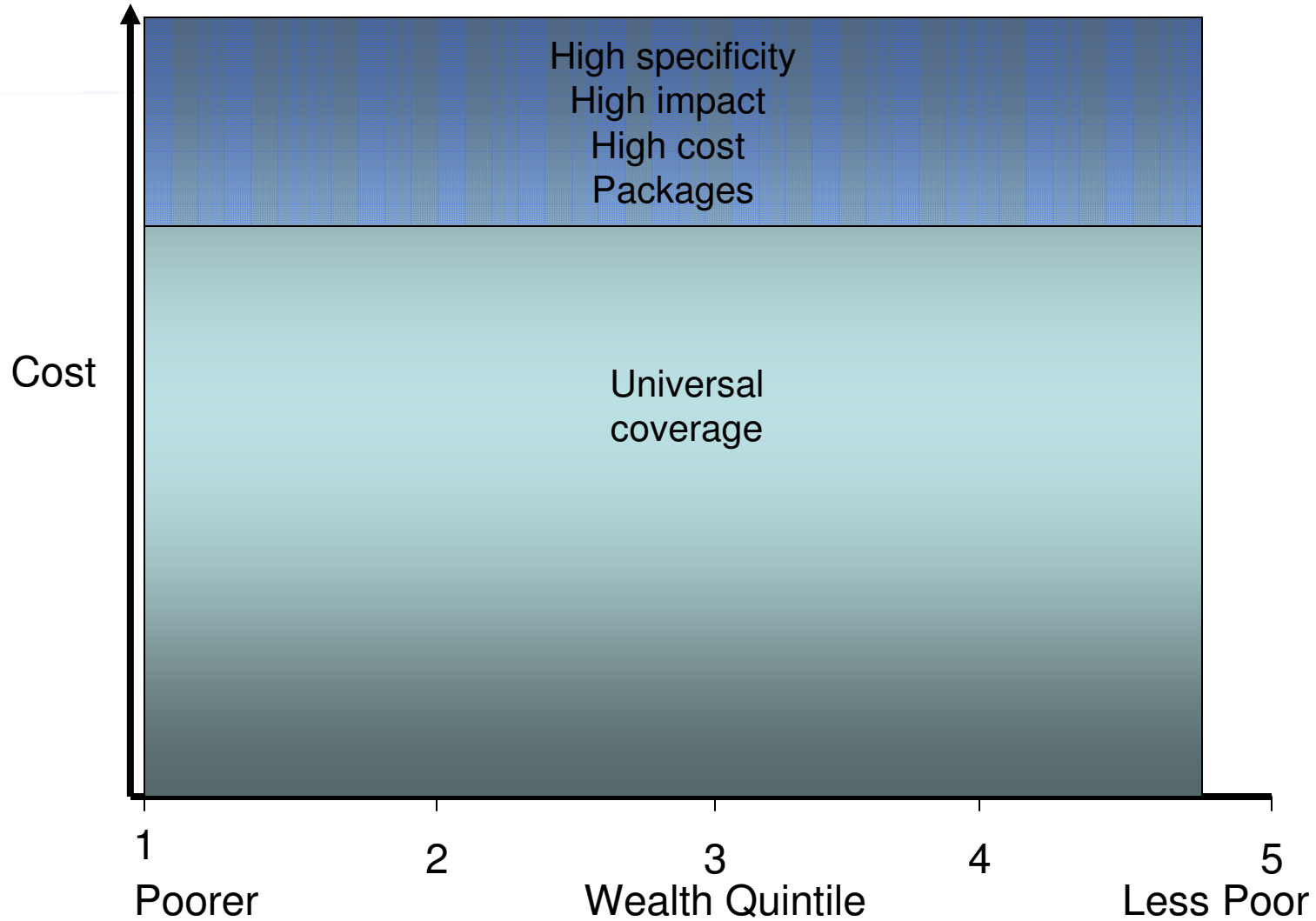


## Towards new universalism





## New universalism





## High performance health systems provide universal support for essential interventions

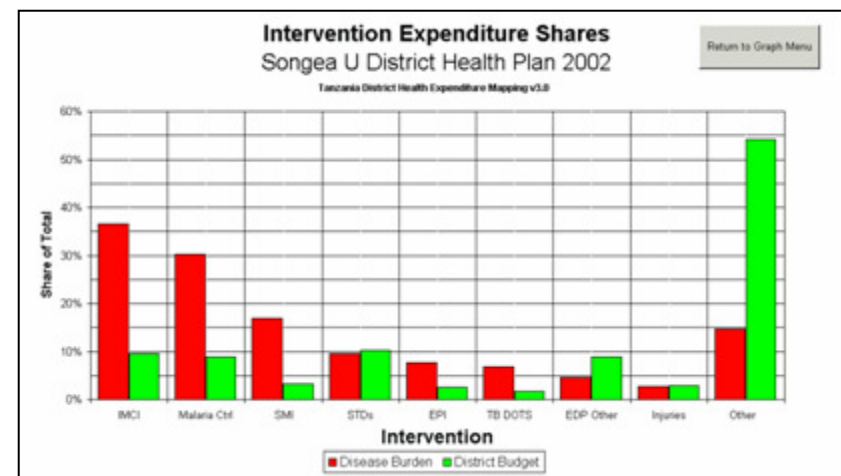
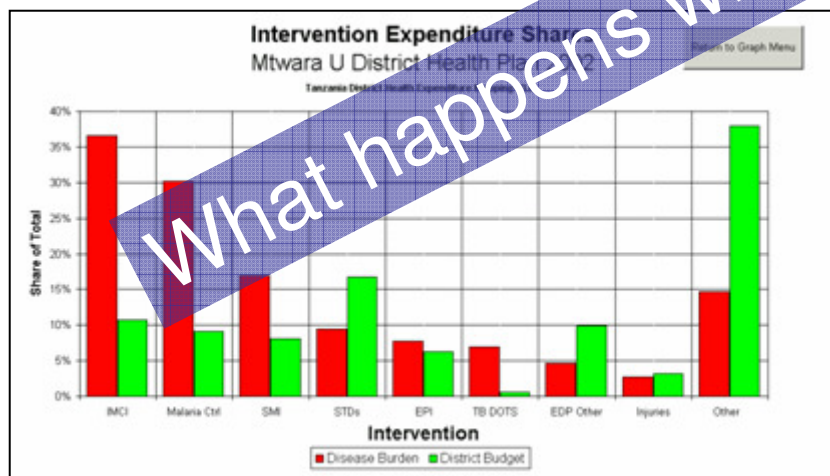
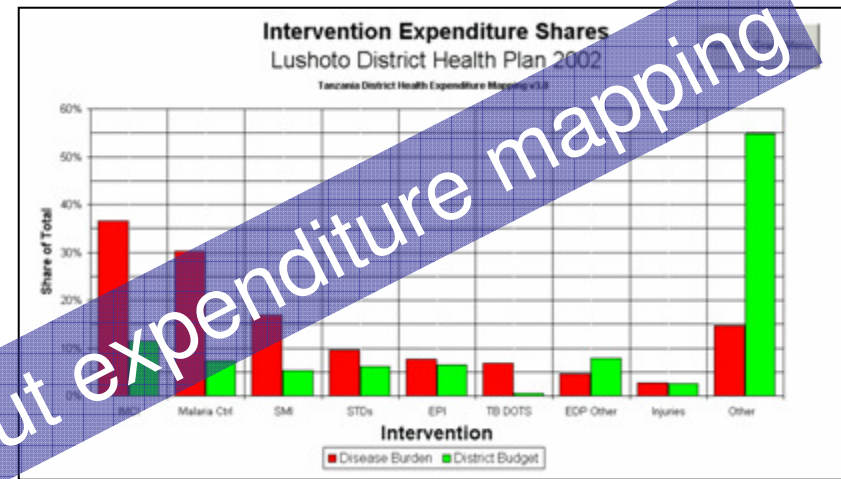
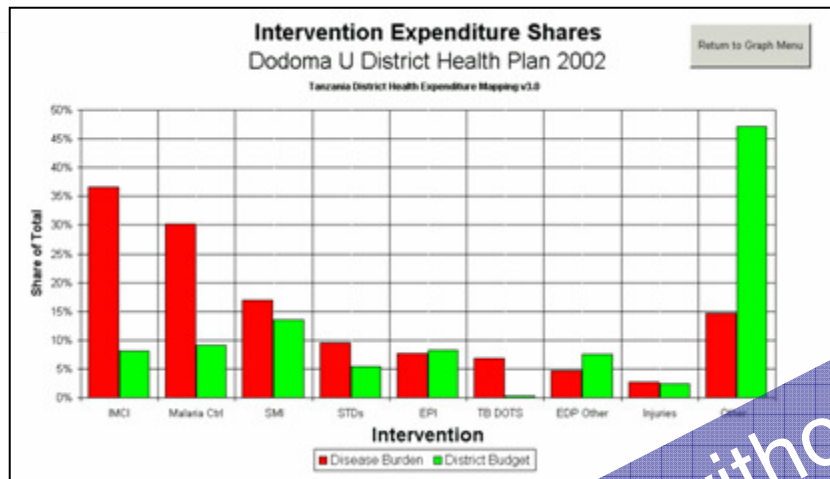
- What are these interventions?
- How much weight should be given?
- How can district health systems do this?







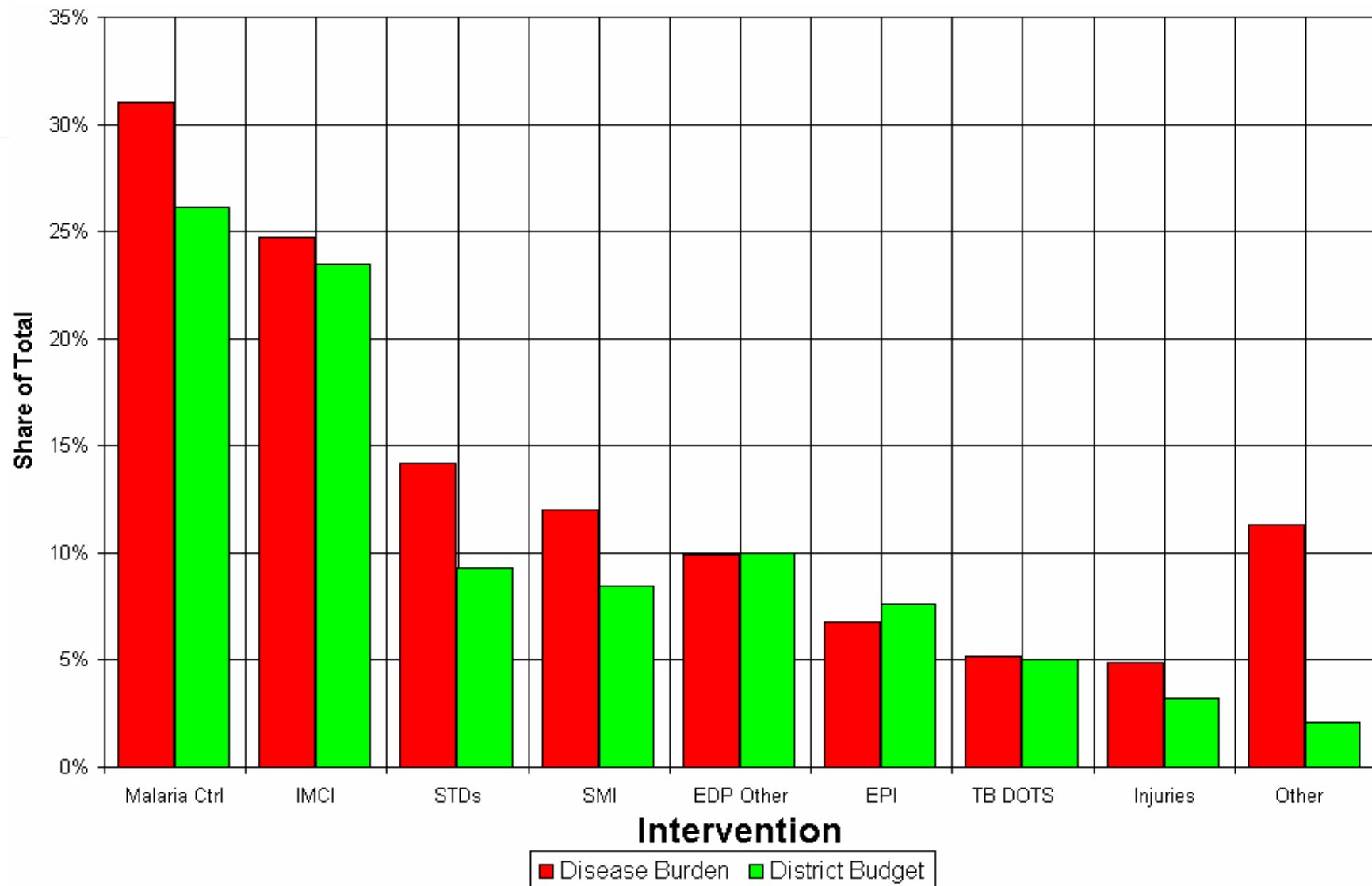
## District intervention priorities (red) District implementation priorities (green)



What happens without expenditure mapping

# With expenditure mapping

## District Health Accounts Tool and new funds





# District Health Accounts



United Republic of Tanzania

Prime Minister's Office - Regional  
Administration and Local Government  
Ministry of Finance

## PlanRep2

Planning and Reporting Database for Local Government Authorities

**2006/07**

Quit  
PlanRep

Main

- Performance Budget Framework (MTEF)
- Revenue Projection
- Budgets
- Funds Received
- Physical Implementation
- Expenditure
- Budget Submission Forms
- Printouts
- Utilities

A graphical analytical summary of the content of annual District Health Plans including:

- priorities,
- partners,
- sources of funding,
- budget mapping,
- expenditure analyses

version 6.8b

English

Kiswahili

C:\PlanRep2\PlanRep2\_data\_2006\_07.mdb

Council: Bagamoyo, Pwani

# Features of PlanRep

- Single tool for all sectors
- Includes all DHA functions for the health sector
- Owner and driver is: Ministry of Finance and Ministry of Local Government
- Used for budget and expenditure performance
- Embeds MTEF

The screenshot displays the PlanRep2 web application interface. At the top left, there is the national emblem of Tanzania, with the text "United Republic of Tanzania" below it. Further down, it reads "Prime Minister's Office - Regional Administration and Local Government" and "Ministry of Finance". To the right, the title "PlanRep2" is prominently displayed in a large, teal font, with the subtitle "Planning and Reporting Database for Local Government Authorities" underneath. A horizontal bar with green and blue stripes separates the header from the main content area.

The main content area features the fiscal year "2007/08" in a large teal font. Below this, there are two buttons: "Quit PlanRep" and "Home". A checkbox labeled "Show page numbers" is checked. To the right, under the heading "Budgets", there is a list of menu items, each preceded by a small square icon:

- Revenue allocation
- Personal Emoluments (PE)
- Other Charges
- Development
- Health Sector funding sources
- Health budget outside council accounts
- Export Budget To Epicor
- Unlock budget
- Return

At the bottom of the page, the version number "version 6.8z" is shown on the left. In the center, there are radio buttons for language selection: "English" (selected) and "Kiswahili". On the right, the file path "D:\Tools\PlanRep\PlanRep 6.8z\PlanRep2\_data\_2007\_08.mdb" and the organization name "Bagamoyo District Council" are displayed.

# PlanRep: a multi-sectoral tool for performance budgeting

- National budget and expenditure databases for all districts and sectors.
- Links health expenditures to:
  - To poverty reduction strategy
  - To government financial codes
  - To sentinel burden of disease
  - To health interventions
  - To health systems support
  - To MOH guidelines
  - To priorities
  - To MDGs
- Graphical interface
- Performance budgeting

United Republic of Tanzania  
Prime Minister's Office - Regional  
Administration and Local Government  
Ministry of Finance

## PlanRep2

Planning and Reporting Database for Local Government Authorities

2006/07

Quit PlanRep

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version 6.8b

English Kiswahili

C:\PlanRep2\PlanRep2\_data\_2006\_07.mdb  
Council: Bagamoyo, Pwani

# Features of PlanRep

- Tags expenditures to:
  - Government Financial System codes
  - Poverty reduction strategies and MDGs
  - Health system functions
  - Health interventions
  - Community burden of disease
  - Source of funds
  - Person responsible for each activity
  - Easy data entry via drop-downs
- Generates reports for:
  - Villages
  - Wards
  - Local government authorities
  - Central government
  - Sectors
  - Funders

### Other Charges budget

Objective: To improve services and reduce HIV/AIDS infections

Targets (15 targets):

Code	Description
500B A01S	HIV/AIDS prevalence reduced from 10% to 9% by 2006/07
500B A02C	Care taking skills training conducted to 5,484 MVCs by 2006/07
500B A03C	Finance Management skills training conducted to 28 MVCs Committees
500B A04S	Improved Follow up supervision and monitoring system of immunization coverage in the district by year 2006/07
500B A05C	Improved livelihood of 5484 of Most vulnerable children
500B A06C	98 HIV/AIDS committees empowered to effect response in the district by year 2006/07

Policy and Planning (5004)

Activities (1 activities selected):

Activity	Description	Funding source
A01S01	To mark the Climax World AIDS Day	Local Government Block Grant
*		Local Government Block Grant

Inputs (2 inputs):

Activity	GFS Code	Description	Unit	Unit cost	Q1(%)	Q2(%)	Q3(%)	Q4(%)
A01S01	260302	Food and Refreshments	person	10,000 B	0	100	0	0
A01S01	270503	Diesel	litres	1,200 B	0	100	0	0
*					25	25	25	25

Annual budget:

Year	Quantity	Cost
2007/08	100.0	1,000,000
2008/09	120.0	1,200,000
2009/10	140.0	1,400,000
<b>Input total</b>		<b>1,000,000</b>
<b>Activity total</b>		<b>1,240,000</b>
<b>Target total</b>		<b>1,240,000</b>

### Health budget outside council accounts

Funding Source: Clinton Foundation

Funding Source with activities: Clinton Foundation

Activity	Priority Area/ Organisational	Intervention/Organisational Item (Double-click to select)	Amount
Malaria	Communicable Disease Control	Malaria ITNs	246,000,000
*			

# Features of PlanRep

- Other linkages
  - Via MTEF to National Health Accounts
  - Via EpiCor to District accounting system (both directions)
  - Via EpiCor to Ministry of Finance
- Provides correctly calculated budgets on official budget submission forms
- Toggles between both official languages (Swahili & English)

United Republic of Tanzania  
Prime Minister's Office - Regional  
Administration and Local Government  
Ministry of Finance

# PlanRep2

Planning and Reporting Database for Local Government Authorities

**2007/08**

[Quit PlanRep](#)

[Home](#)

Show page numbers

### Budget Submission Forms

- Form 1: Annual and Forward Budget Estimates**
- Form 2: Recurrent Expenditure Forward Budget
- Form 3b : Expenditure Review
- Form 4 & 5: Draft Annual Estimates
- Form 8a - 8e: Personal Emoluments Estimates
- Form 9: Summary of PE Estimates Establishment and Strength
- Chapter 4: Budget Performance Review
- Return



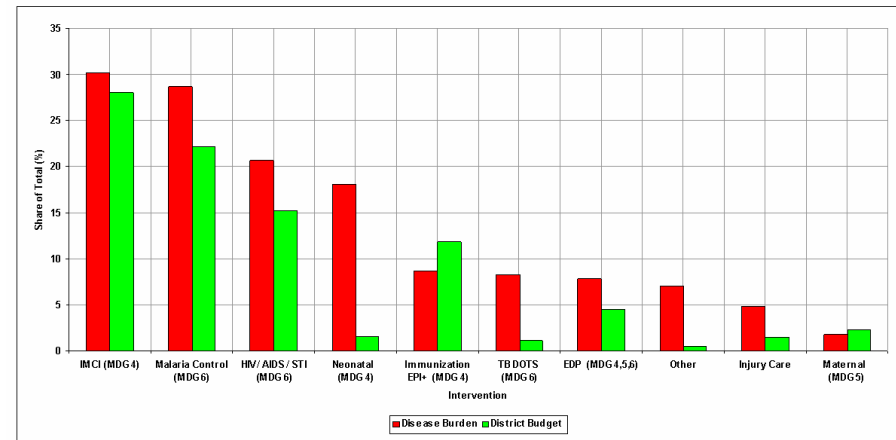
# Features of PlanRep

- Communication function
  - Provides graphical budget analytic information on:
    - Ministry of Health guidelines (e.g. SWAp ceilings)
    - Official Essential Health Interventions Package
    - Current drug prices
    - Burdens of disease
    - Sub-votes for budgets available
    - GFS codes
- Associated PlanRep Macro Tool
  - Allows LGAs and central ministries to compile all budgets into a single database for comparative analysis



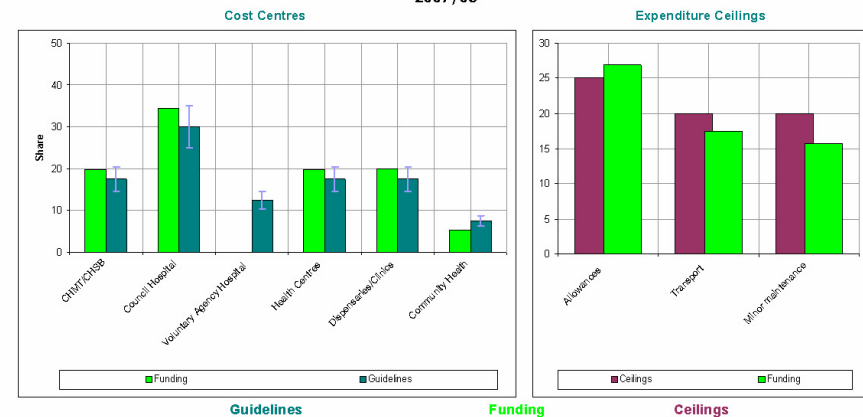
## Intervention Burden and Expenditure Shares

Bagamoyo District Council  
2007/08

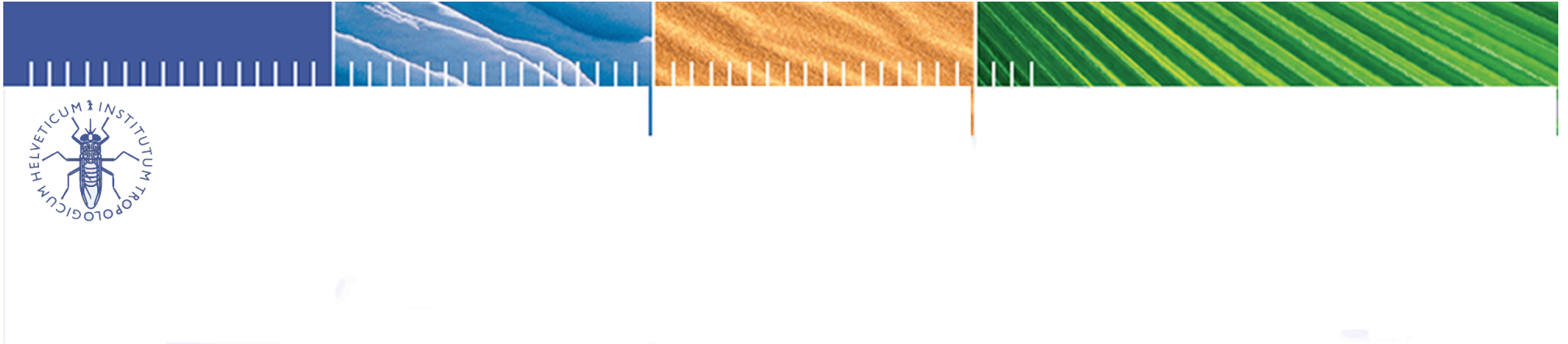


## Council Basket Grant Allocations

Bagamoyo District Council  
2007/08





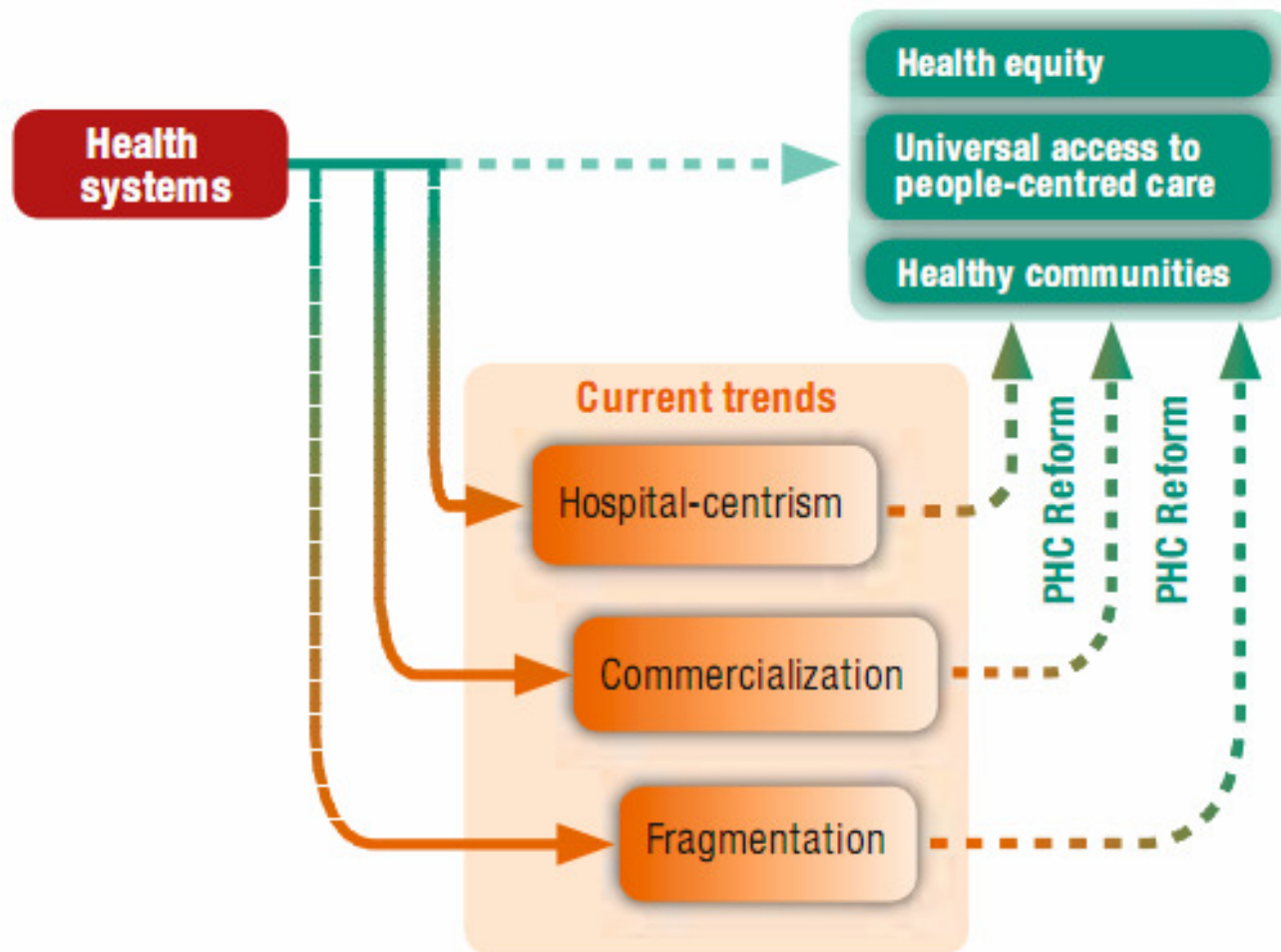


# PHC & Health Systems





## Why Primary Health Care (PHC) principles are important for health systems





## Changing focus of PHC to connect with health systems

- Basic package & essential drugs
- Concentration on MCH
- Infectious, acute disease focus
- Hygiene, water & sanitation
- Simple technology for volunteer HW
- Participation to mobilize community resources via committees
- Gov funded services; top down
- Bilateral aid & technical assistance
- Primary care as antithesis of hospital
- PHC as cheap and modest investment
- Universal access & social protection
- Health of all in community
- Respond to expectations & risks
- Healthier life styles, social, env hazards
- Teams of health workers > access
- Institutionalized civil society participation in policy & accountability
- Pluralistic globalized health systems
- Global solidarity & joint learning
- Primary care as coordinator of all levels
- PHC not cheap; but better value than alternatives



## Current PHC reforms



- Challenges:
  - Governance
  - Participation
  - Social protection
  - System policies
  - Fragmentation
  - Achieving universal coverage



# Summing up

The best diagnostics, vaccines, drugs, and other interventions are of little value without a functional health system to ensure delivery with:

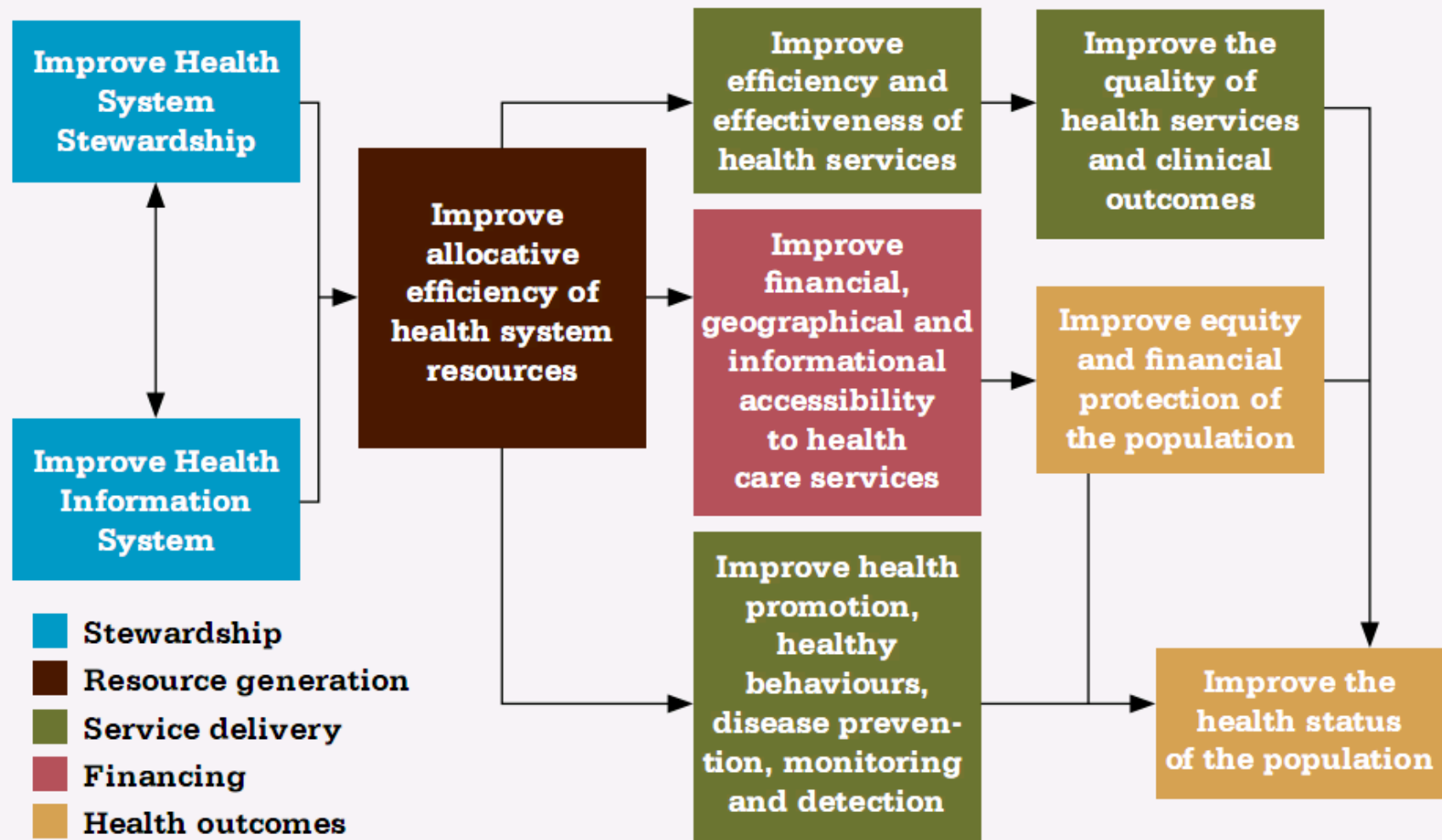
- High efficiencies (technical, allocative, dynamic)
- High effective coverage (new universalism)
- High responsiveness (PHC principles)
- High equity (social justice)

We need to:

- Understand the determinants of systems effectiveness
- Innovate, invest and implement
- Use systems thinking to develop systems that perform as expected



## Many paths to the same end

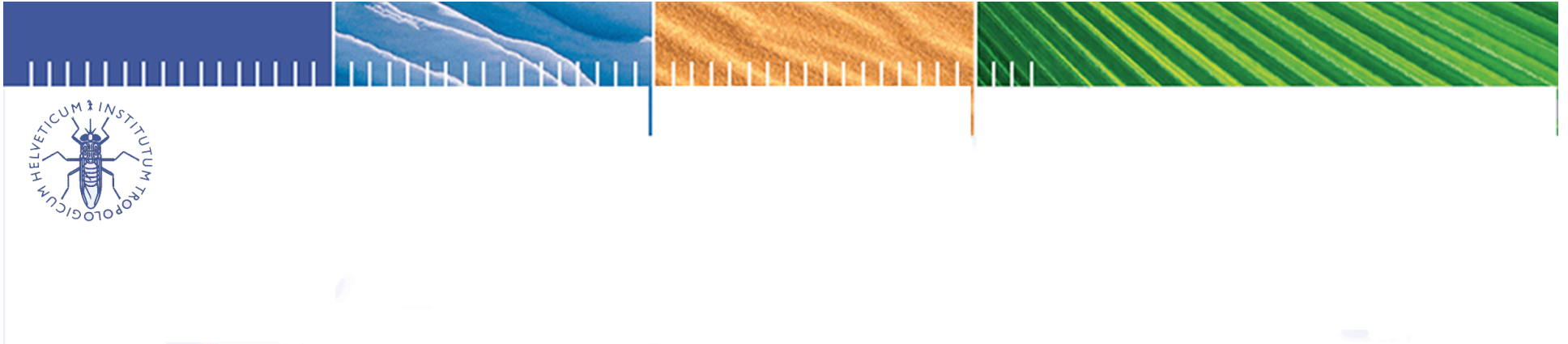




# Useful health system resources

## Web sites

- [www.who.int/topics/health\\_systems/en/](http://www.who.int/topics/health_systems/en/)
- [www.who.int/alliance-hpsr/en/](http://www.who.int/alliance-hpsr/en/)
- [www3.who.int/whosis/](http://www3.who.int/whosis/)
- [www.healthsystems2020.org/](http://www.healthsystems2020.org/)
- [www.euro.who.int/observatory](http://www.euro.who.int/observatory)
- [www.dfidhealthrc.org/](http://www.dfidhealthrc.org/)
- [www.usaid.gov/our\\_work/global\\_health/hs/resources/index.html](http://www.usaid.gov/our_work/global_health/hs/resources/index.html)
- [www.eldis.org/go/topics/resource-guides/health-systems](http://www.eldis.org/go/topics/resource-guides/health-systems)
- [www.idrc.ca/tehip](http://www.idrc.ca/tehip)
- <http://tools.google.com/gapminder>



## Next Session

Health Information Systems

