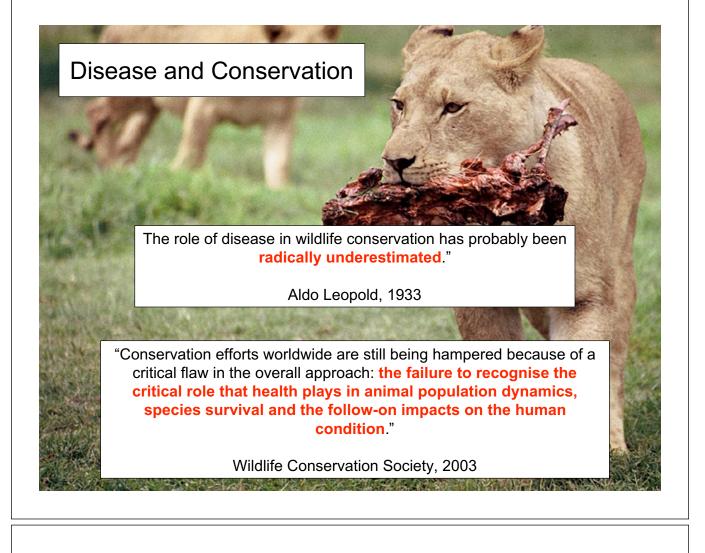
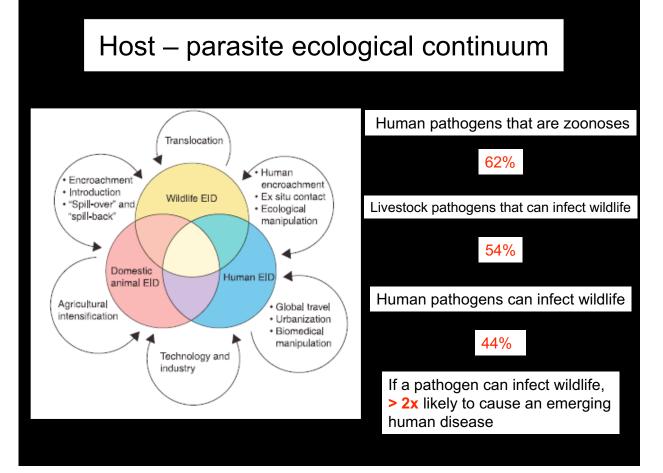
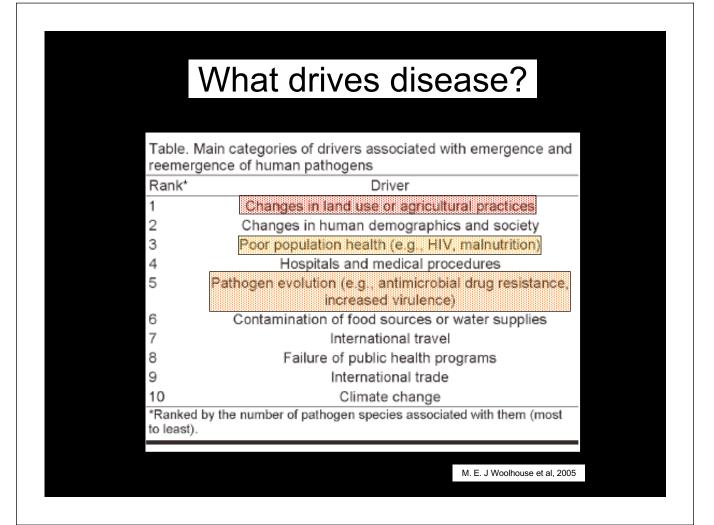


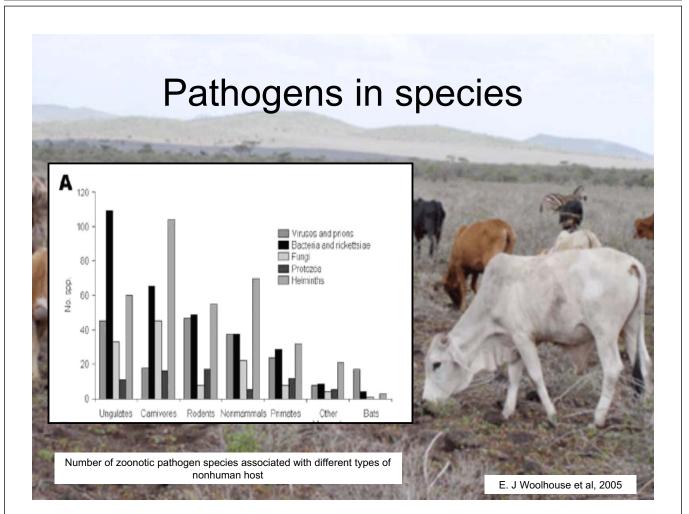
Introduction

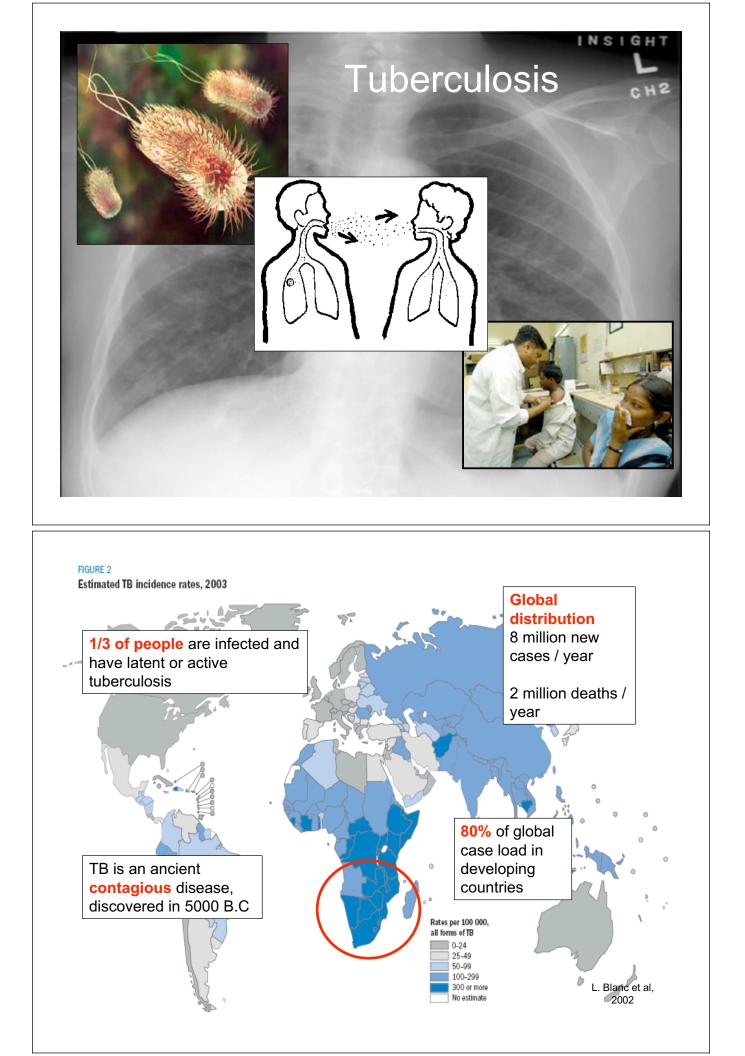
- Disease, Ecosystem Health and Conservation
- Tuberculosis Latest WHO report, facts and figures
- Bovine Tuberculosis (BTB) a 'likelihood' scenario?
- Why is zoonotic TB a conservation issue?
- What data is available?
- Discussion on future data acquisition and applications for the GLTFCA

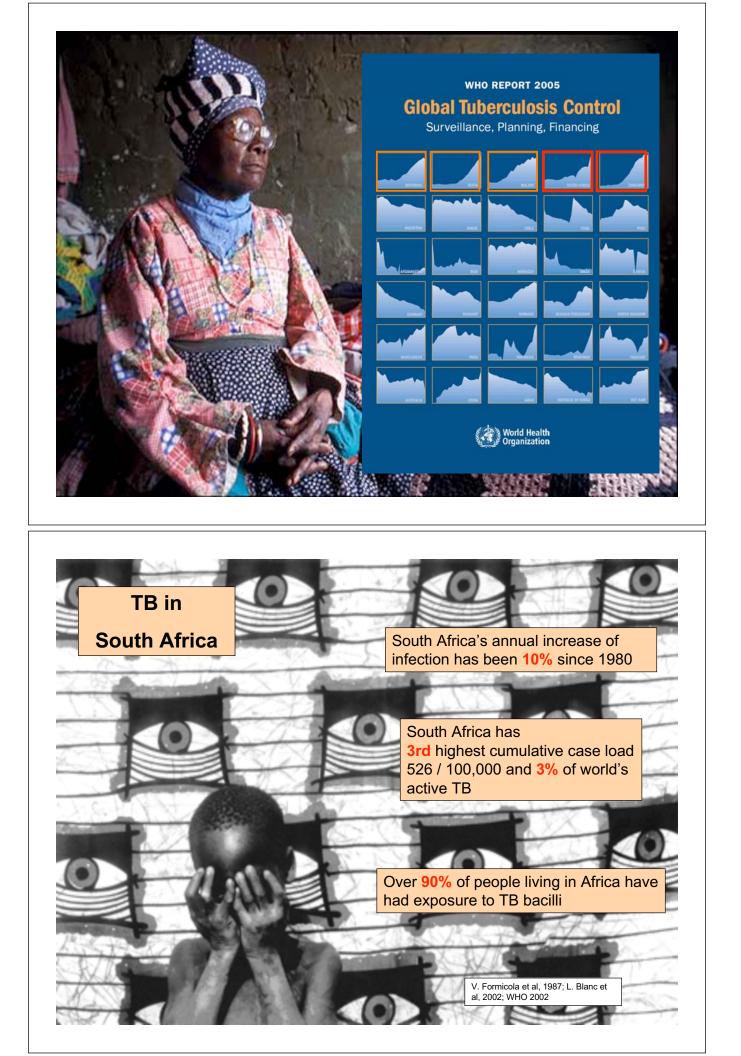












Bovine Tuberuclosis

(BTB)



Bovine TB – a hidden threat

Global distribution

Listed as a category **B** disease by the OIE

Chronic disease that has an effect on animal populations and productivity

Wide host range, including; ruminants, predators, scavengers, small mammals

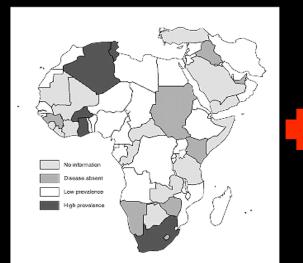
Difficult to eradicate due to the large disease reservoir apparent in wildlife

Reported BTB Disease Status in Africa

1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
+	+	+	+	+	+	+	+	+	+
+	+	+			+	+	NR		NR
+	NR	000	1993	NR	NR	NR	NR		NR
	+		+	+	+	+	+		NR
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Role of Livestock and Disease



About 29% of the world's land surface is used for livestock

In Africa, **80%** of the population is rural and depend solely on livestock for food and wealth (AU 2002)

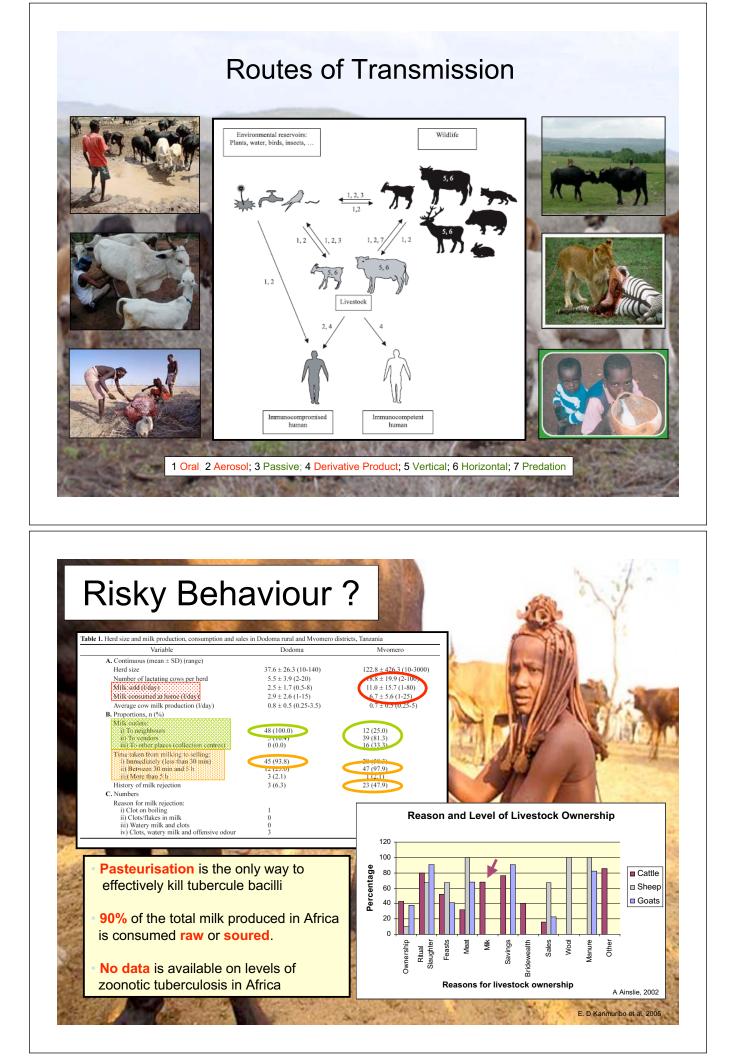
Sub-Saharan Africa has experienced a population increase of **78%**

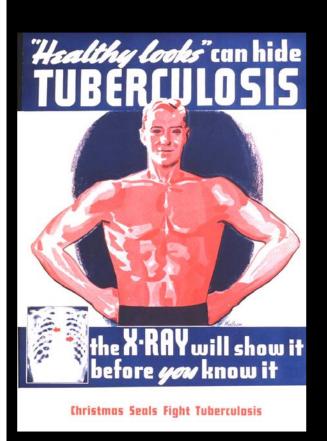
Undernourished population had increased to 180 million people in 1997

85% cattle, **82%** people live where BTB is only partially controlled

O Cosivi et al, 1998

= CONSTANT RISK OF INFECTION

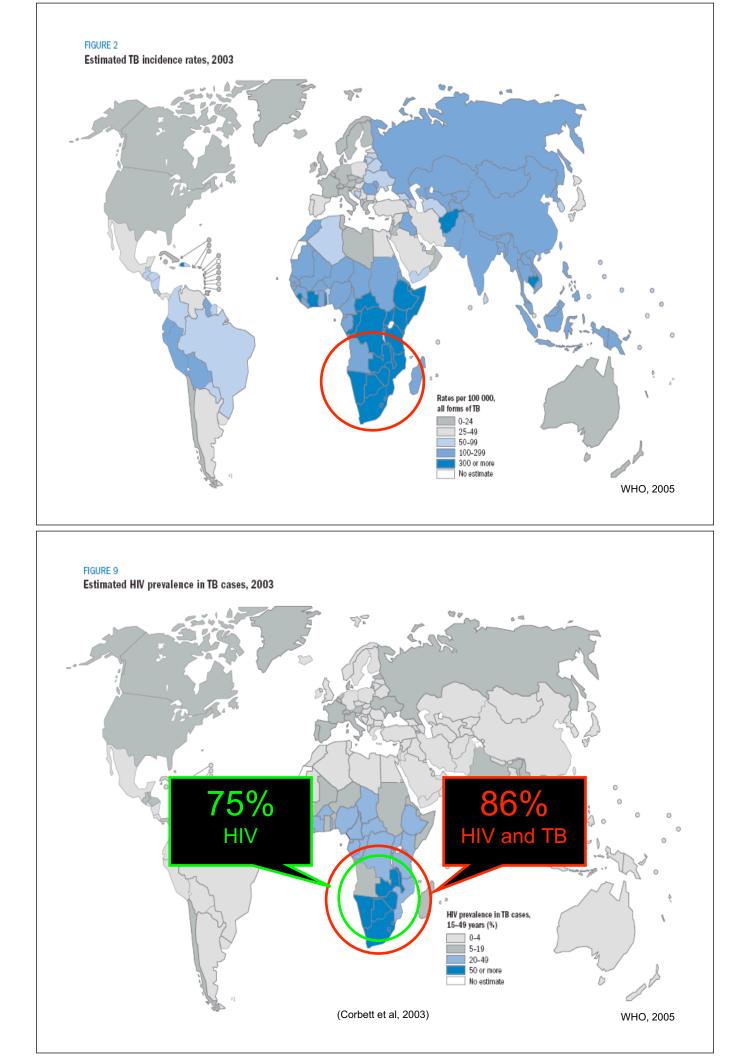


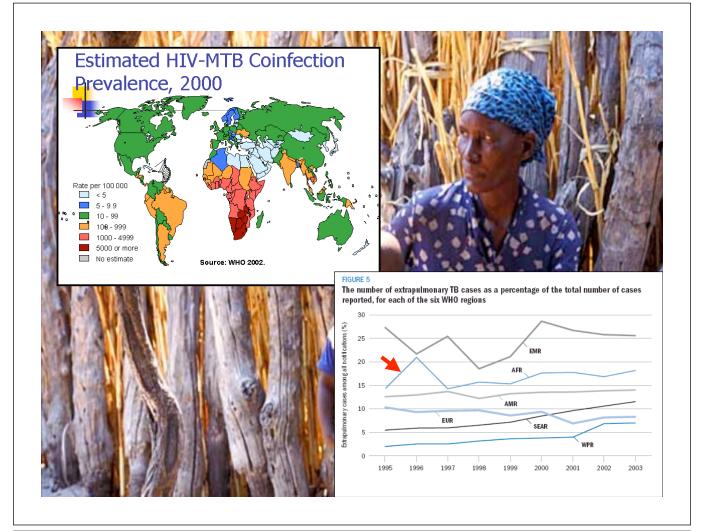


Why is zoonotic TB so serious ?

- 1. Causes extra-pulmonary manifestations (9.4% of global TB)
- 2. Slow to develop, leading to delayed diagnosis and treatment; and an elongated period for infecting others.
- 3. Infects many organs, which makes treatment difficult.
- Multi Drug Resistant (MDR) to the top 10 frontline drugs. This increases the duration and cost (x 10) of treatment.
- 5. It increases **re-activation** of latent TB in vulnerable or malnourished people. This may lead to infection by **more than one** TB strain.







Why is zoonotic TB ignored?

International Influence

Western TB eradication schemes established in 1930's ensure all milk is pasteurised and meat inspected. (**BTB is not a problem!**)

Drug Company Influence

Vaccination – BCG has reduced the rate of TB infection. However, only **58%** of the annual injections have been administered in South Africa in 2005!

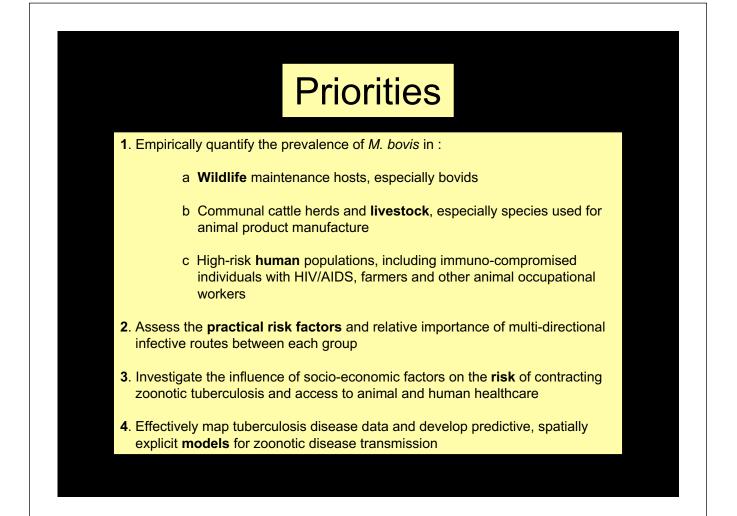
Primary treatment still relies on Isoniazid and Rifampicin, developed in 1942 and 1957 respectively.

Medical Priorities

In South Africa (2003) 6.2 million people had HIV, 0.52 million died of AIDS and 0.23 million people were diagnosed with TB.

Resource and Infrastructure Availability

In South Africa (2003) there were **2306 practicing veterinarians**, many commercial farms and not enough time to test rural farming areas.



What we know?

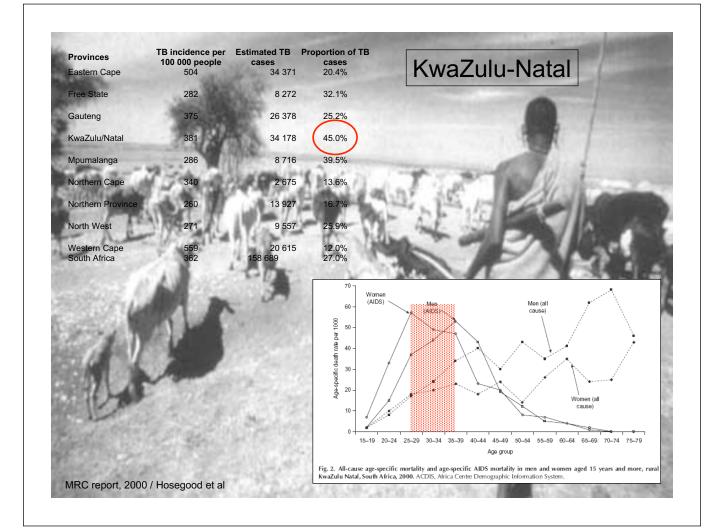
 Table
 Distribution of Mycobacterium species amongst

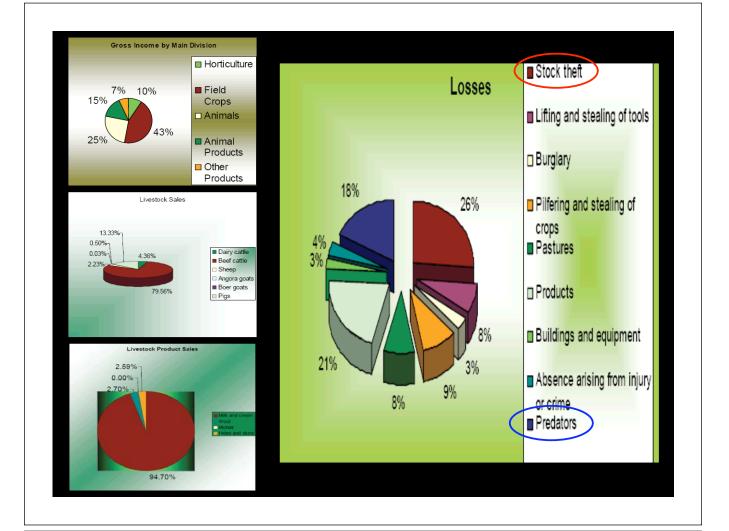
 positive cases of tuberculosis

		Form of tuberculosis							
Mycobacterium	Isolates	Extra-pulmonary	Pulmonary						
spp.	n (%)*	n (%)	n (%)						
<i>M. tuberculosis</i>	31 (70.5)	15 (71.4)	16 (69.1)						
M. bovis	7 (15.9)	6 (28.6)	1 (4.3)						
Other species	6 (13.6)	0	6 (26.6)						
Total isolates	44	21	23						

TABLE 3 Case notifications, 2003

		ALL NEW AND RELAPSE CASES		NEW SMEAR-POSITIVE		NEW SMEAR-NEGATIVE OR SMEAR UNKNOWN		NEW EXTRAPULMONARY		RE-TREATMENT CASES EXCLUDING RELAPSE		OTHER®		% OF NEW PULMONAR CASES SMEAR POSITIV	
	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	NON-DOTS	
1 India	836 768	236 297	372 088	61 183	305 921	153 503	112 064	20 189	102 542	13 247	-	-	55	29	
2 China	553 677	62 191	257 287	10 127	206 493	42 312	27 804	2 964	64 887	2 822	-	-	55	19	
3 Indonesia	178 260	-	92 566	-	77 561	-	4 047	-	-	-	-	-	54	-	
4 Nigeria	44 184	-	28 173	-	13 276	-	1 525	-	2 151	-	261	-	68	-	
5 Bangladesh	88 156	-	53 618	-	24913	-	7 120	-	-	-	-	-	68	-	
6 Pakistan	73 100	-	20 962	-	34 447	-	12 874	-	3 1 8 4	-	-	-	38	-	
7 Ethiopia	117 600	-	39 698	-	35 141	-	40 883	-	676	-	-	-	53	-	
8 South Africa	227 278	42	116 331	33	58 535	5	37.682	4	28:094	8			67	87	
9 Philippines	134 375	-	72 670	-	55 942	-	1 693	-	-	-	-	-	57	-	
10 Kenya	91 522	-	38 158	-	37 135	-	13 403	-	1 1 27	-	2 661	-	51	-	
11 DR Congo	84 687	-	53 5 78	-	9 352	-	18 357	-	1 641	-	387	-	85	-	
12 Russian Federation	21 064	102 977	6 322	22 546	12 780	72 252	1 016	3 648	-	22 512	851	4 840	33	24	
13 Viet Nam	92 741	-	55 937	-	16 791	-	14 564	-	680	-	-	-	77	-	
14 UR Tanzania	61 579	-	24 899	-	21 9 11	-	12 959	-	378	-	2 708	-	53	-	
15 Brazil	16 560	63 554	9 061	30 877	4 795	18 727	1 503	9 081	799	3 663	1 256	2 690	65	62	
16 Uganda	41 805	-	20 320	-	16 612	-	3 249	-	-	-	1 096	-	55	-	
17 Thailand	54 504	-	28 459	-	17 596	-	6 7 5 6	-	-	-	-	-	62	-	
18 Mozambique	28 602	-	16 138	-	7 847	-	3 441	-	505	-	-	-	67	-	
19 Zimbabwe	53 183	-	14 488	-	28 246	-	8916	-	-	-	3 9 3 4	-	34	-	
20 Myanmar	75 744	-	27 448	-	26 006	-	17 796	-	2 451	-	-	-	51	-	
21 Afghanistan	13 808	-	6510	-	3 440	-	3 254	-	141	-	-	-	65	-	
22 Cambodia	28 216	-	18 923	-	4 307	-	4 2 3 2	-	79	-	91	-	81	-	
ligh-burden countries	2 917 413	465 061	1 373 634	124 766	L 017 047	286 799	355 138	35 886	209 335	42 252	13 245	7 530	57	30	
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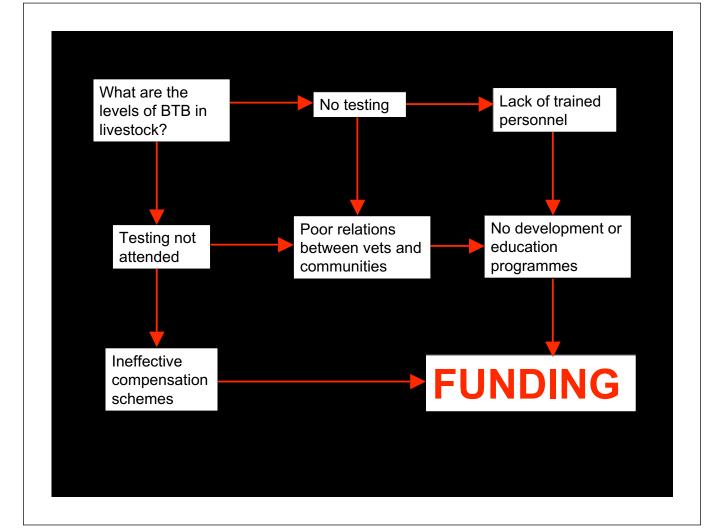


TABLE 15

NTP budgets and available funding, high-burden countries, 2005

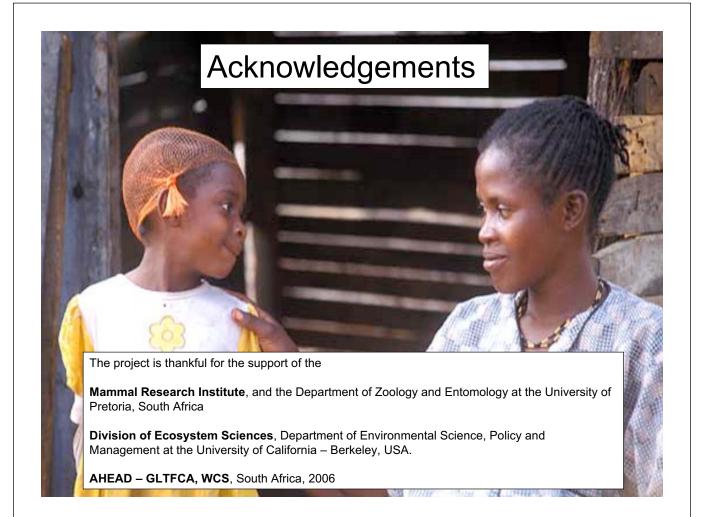
	TOTAL NTP BUDGET	CHANGE FROM 2002	CHANGE FROM	AVAILABLE FUNDING (US\$ MILLIONS)					CHANGE IN AVAILABLE FUNDING SINCE 2002, BY SOURCE (US\$ MILLIONS)						
	(US\$ MILLIONS)	(US\$ MILLIONS)	2002 (%)	GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GFATM)	GFATM	GAP	GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GFATM)	GFATM	GAP		
1 India	46	10	29	5	11	6	8	15	-1	-13	0.7	8	15		
2 China	158	60	61	98	14	4	21	21	45	14	2	21	-22		
3 Indonesia	43	9	25	24	0	4	15	0	17	0	1	15	-25		
4 Nigeria*	12	3	35	2	0	3	0	7	0.5	0	-2	0	-0.05		
5 Bangladesh⁵	22	15	210	3	6	3	8	1	-0.1	6	-0.6	8	1		
6 Pakistan	19	14	257	8	0	3	0	9	5	0	2	0	7		
7 Ethiopia°	7	2	40	0.6	0	1	5	0	-0.6	0	-3	5	0		
8 South Africa*		J	ł	ł	-	ł	-	Ŧ	-	-	-	ł	-		
9 Philippines	8	0.5	6	3	0	4	2	Û	-0.7	0	4	2	-4		
10 Kenya	14	9	177	3	0	0	3	8	2 °	0	-3	3	7		
11 DR Congo ^a	11	4.2	64	0.6	0	5	2	3	-0.4	0	-0.3	2	-0.8		
12 Russian Federation ^r	316	178	129	220	25	2	30	39	90	25	-6	30	39		
13 Viet Nam	12	0.4	4	9	0	0.9	2	0.3	0.5	-2	-0.1	2	0.3		
14 UR Tanzanla≋	9	3	59	1	0	5	0.2	2	1	0	0.6	0.2	1		
15 Brazil	21	8	59	19	0	2	0	0	6	0	2	0	0		
16 Uganda [⊳]	6	1	22	0.7	0	0.8	0.9	4	0.6	-1	0.3	0.9	0.7		
17 Thailand	5	-1	-23	3	0	0	2	0	-3	0	0	2	0		
18 Mozambique®	7	-1	-10	0.8	0.2	2	4	0.1	0.5	0.2	-0.5	4	-5		
19 Zimbabwe ^r	11	9	536	0.5	0	2	0	9	0.4	0	0.04	0	9		
20 Myanmar	5	2	86	0.4	0	1	3	0.6	-0.03	0	1	3	-2		
21 Afghanistan⁰	3	-0.3	-10	0.3	0	2	0.7	0	0	0	0.5	0.7	-2		
22 Cambodia	7	3	60	0.7	0	4	1	1	-0.6	-0.7	3	1	0.01		
High-burden countries	741	328	59 h	402	56	55	109	119	161	28	3	109	20		

Indicates not available.

^a Available funding compared with 2003, as no funding breakdown was provided in 2002; thus total of changes in available funding by source (US\$ 321 million) does not equal the total shown in column 3 (US\$ 328 million).







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