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Eradication of rinderpest from South Sudan

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Outline

- What is rinderpest?
- Global rinderpest eradication programme
- South Sudan rinderpest eradication programme

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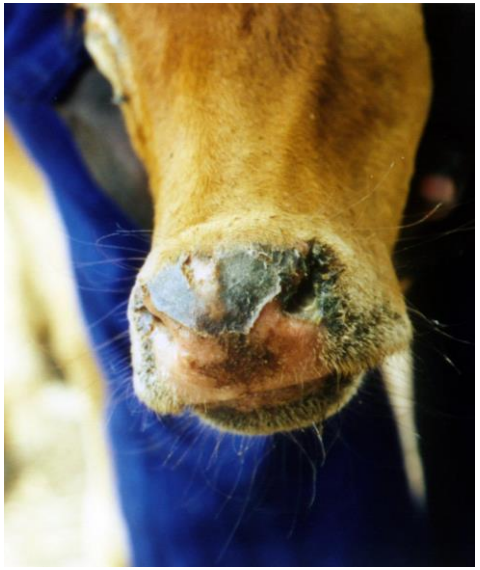
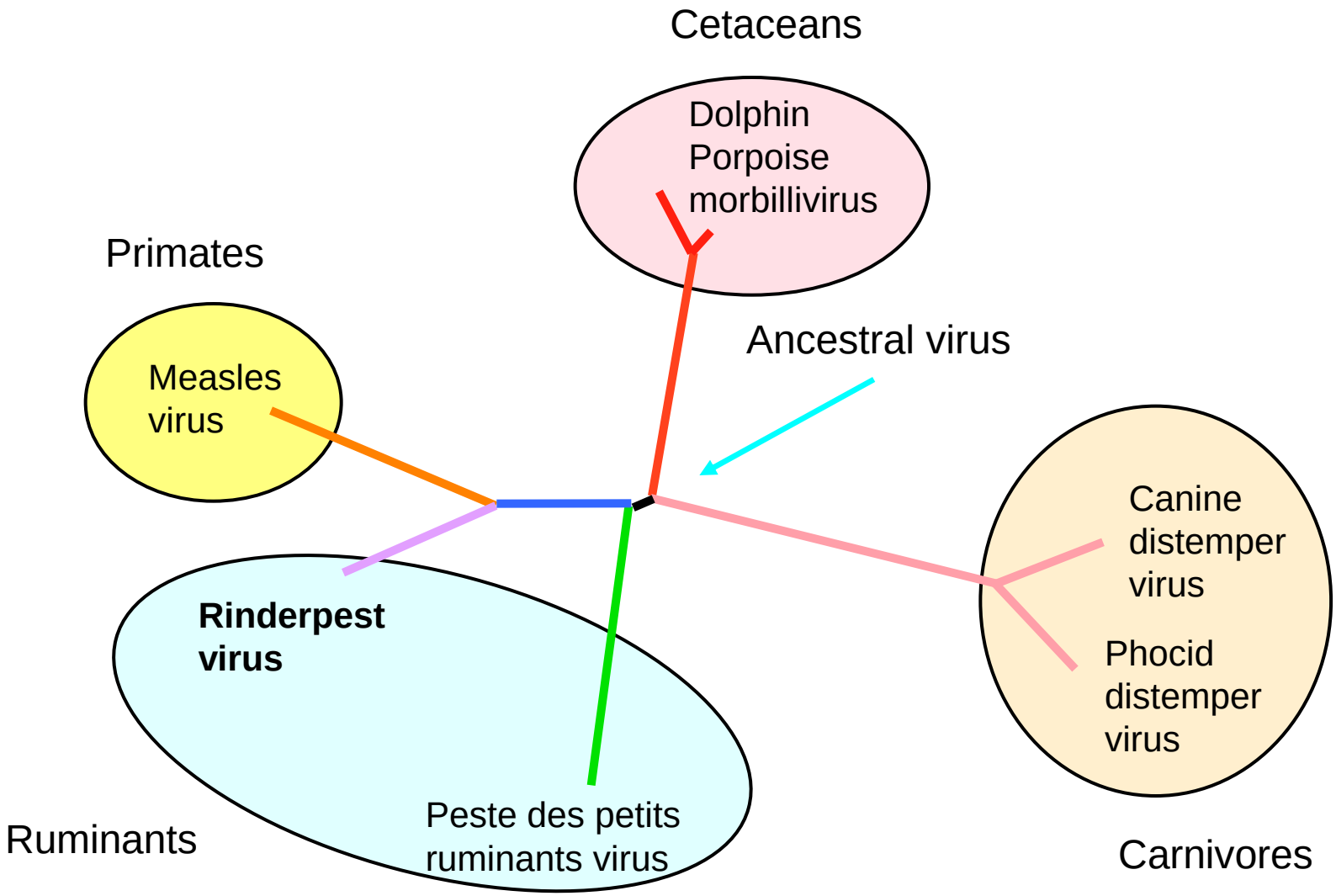
Calves affected by rinderpest during the 1998 rinderpest outbreak in Lopit, South Sudan: lacrimation, nasal discharge, mucosal erosions, dehydration, diarrhoea.





MORBILLIVIRUS PHYLOGENY

Figure courtesy of Peter Roeder based on Barrett et al 1999

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History and distribution

- Originated in Asia
- Frequent epidemics across Europe and Asia – trade, war
- 1880-90s African pandemic

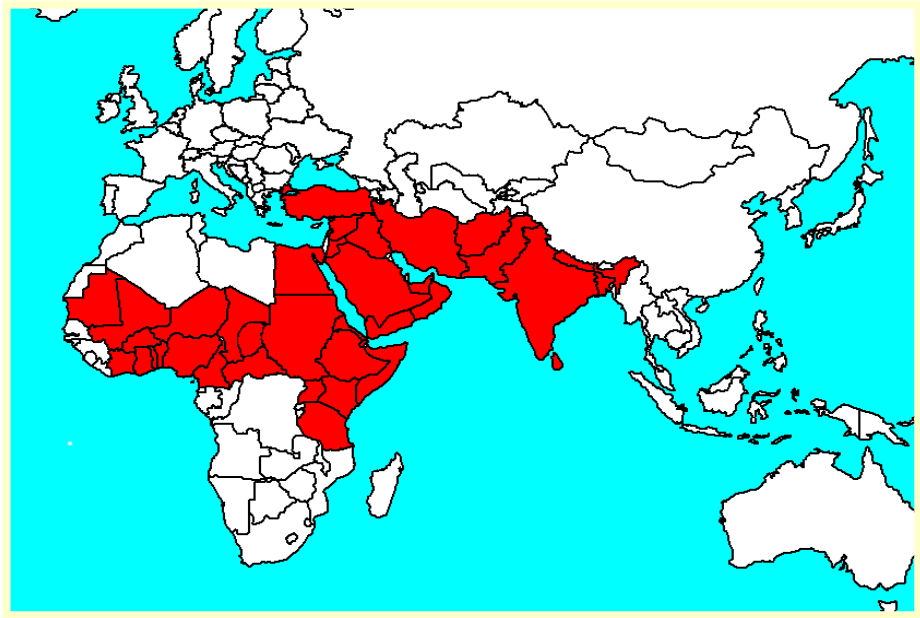
  Loss of milk, meat, transport, draught power

  Famine

- Successful elimination:
  - Europe – early 20th century
  - southern Africa by 1905
  - East and southeast Asia 1950s-60s
- Endemic or repeated introductions
  - India, Pakistan
  - Middle East and Arabian peninsula
  - Sub-Saharan Africa

Rinderpest Eradication

- Feasibility
  - No reservoir or carrier status
  - Transmission by direct contact
  - Short infectious period
  - Lifelong immunity
  - Safe, effective, cheap vaccine
  - Limited distribution
- Impact
  - Food security
  - Livelihoods
  - Trade
- Political will



Early 1980s

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Key international stakeholders

- United Nations Food and Agriculture Organisation (FAO)
  - Regional coordination since 1940s
  - Global Rinderpest Eradication Programme (GREP) operational from 1994
  - Coordination, technical guidance and assistance
  - Goal of eradication by 2010
- World Organisation for Animal Health (OIE)
  - guidelines for surveillance and accreditation of freedom – “The OIE Pathway”
  - diagnostic and vaccine standards
  - scientific commission and ad hoc rinderpest group

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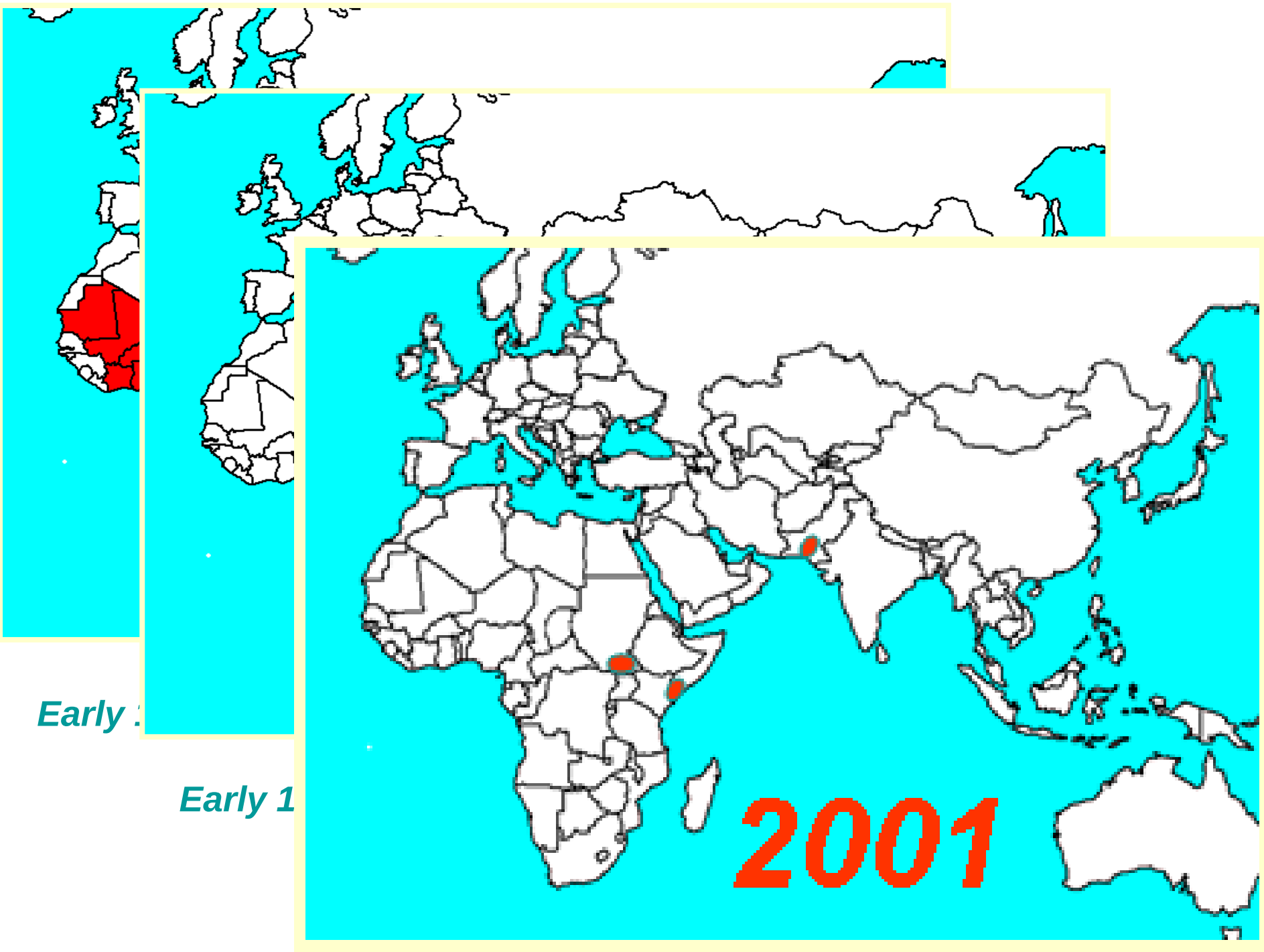

Early

Early 1

Global Freedom from Rinderpest 2011

- Declared in mid-2011 by OIE and FAO
- Rinderpest virus no longer circulating in domestic or wild animals
  - Last confirmed outbreak Kenya 2001
  - No vaccine in use
  - No evidence of virus circulation
  - All countries accredited rinderpest infection free by OIE
- Pending - virus and vaccine stocks

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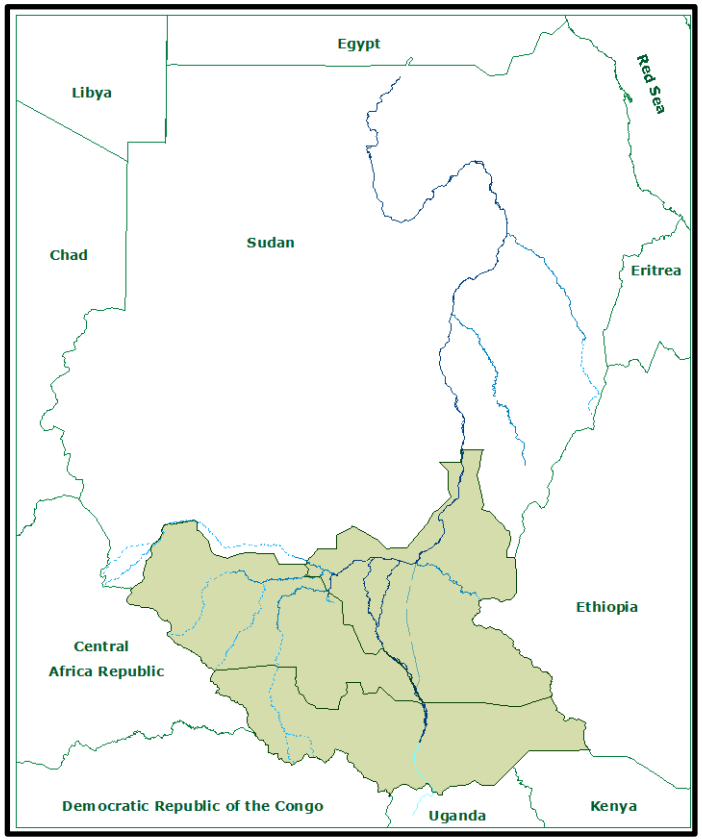
South Sudan (1980s-90s)

- large area
- climatic extremes
- 8 million people – pastoralist, agro-pastoralist
- 10 million cattle, 20 million sheep and goats
- Chronic conflict from 1956 to 2005 (except 1972 -1983)
  - Millions killed, displaced or refugees
  - Destruction of infrastructure, disruption of trade, lack of social services, prevention of development
- 1989 Operation Lifeline Sudan
  - consortium of UN agencies and NGOs, providing humanitarian relief



South Sudan – endemic focus of rinderpest

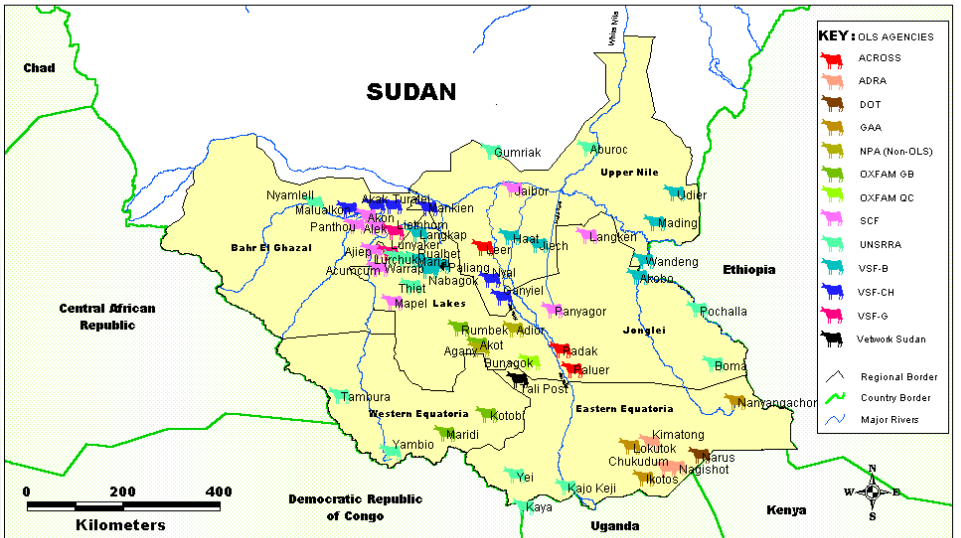
- Introduced to southern Sudan during African pandemic (1890s), periodic epidemics with major impact on livelihoods
- Early attempts at control through vaccination:
  - 1960s JP15, 1970s GTZ, Government of Sudan
- Resumption of conflict in 1983
  - animal health services disrupted → increase in livestock diseases, rinderpest widespread - 1980s, early 1990s endemic focus

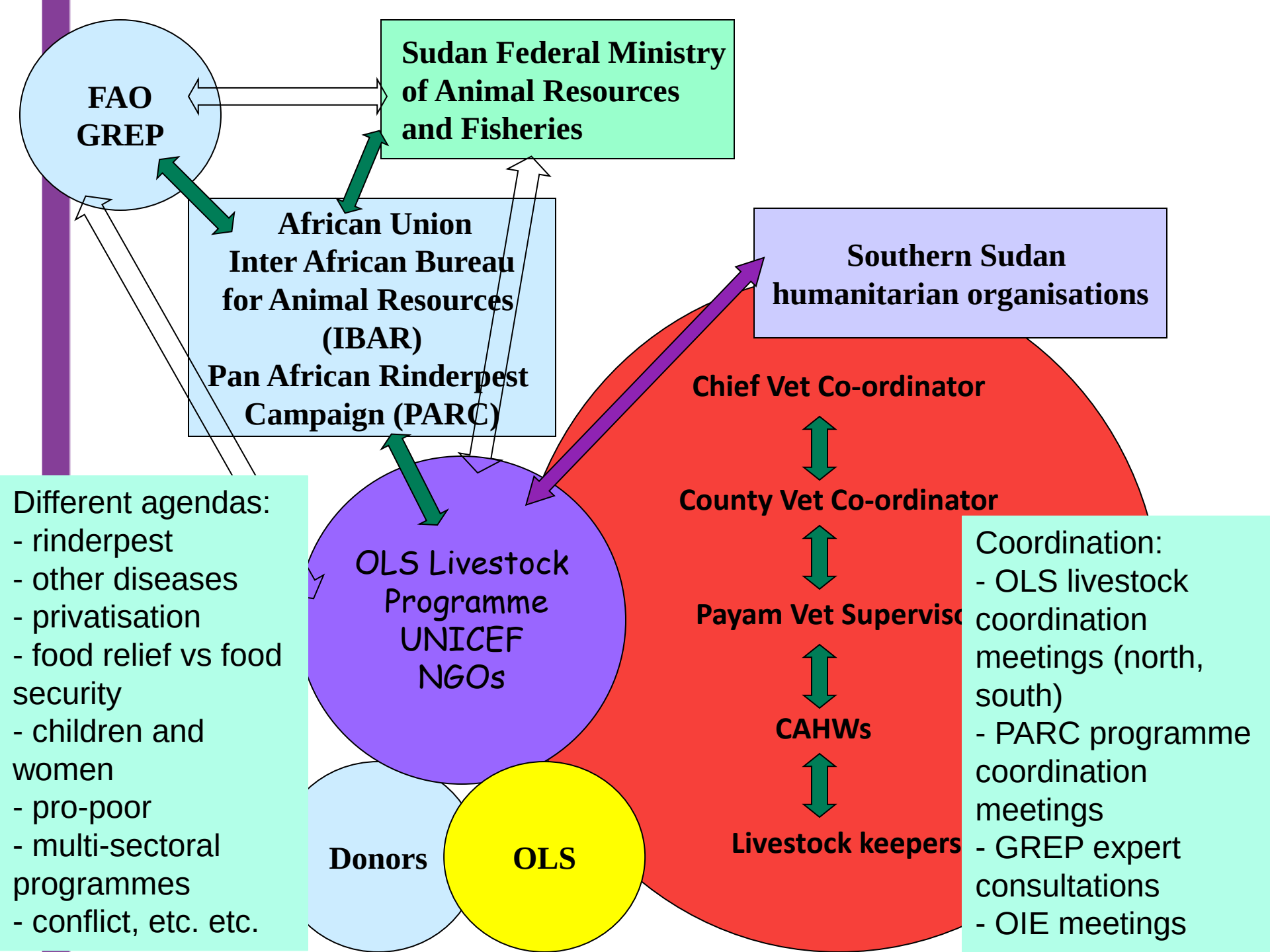
Calves affected by rinderpest during the 1998 Torit outbreak, Eastern Equatoria, southern Sudan



Operation Lifeline Sudan: Livestock Programme

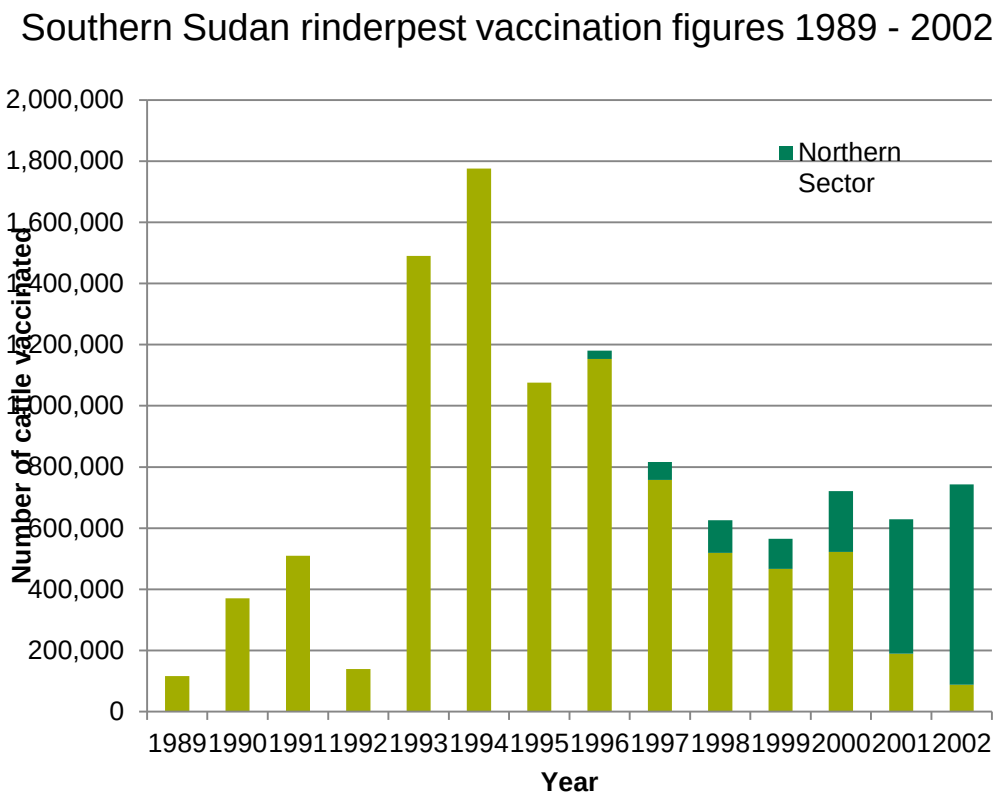
- Community-based animal health programme from 1992
  - Led by UNICEF with international and indigenous NGOs and local counterparts (12-15 NGOs)
- Goal: food security and protection of livelihoods
- Objective: increased livestock productivity through control of major epidemic and endemic diseases
  - baseline assessments: rinderpest highest priority
  - community workshops, selection and 2-week training of community based animal health workers – CAHWs
  - basic kit of medicines and equipment, cold chain, heat stable rinderpest vaccine, vaccination equipment
  - training of supervisors and coordinators (4-9 months)
  - supervision by field vets




FAO
GREP
Sudan Federal Ministry of Animal Resources and Fisheries
African Union
Inter African Bureau for Animal Resources (IBAR)
Pan African Rinderpest Campaign (PARC)
Southern Sudan humanitarian organisations
Chief Vet Co-ordinator
County Vet Co-ordinator
Payam Vet Supervisc
CAHWs
Livestock keepers
OLS Livestock Programme
UNICEF
NGOs
Donors
OLS
Different agendas:
- rinderpest
- other diseases
- privatisation
- food relief vs food security
- children and women
- pro-poor
- multi-sectoral programmes
- conflict, etc. etc.
Coordination:
- OLS livestock coordination meetings (north, south)
- PARC programme coordination meetings
- GREP expert consultations
- OIE meetings

Vaccination Phase 1992-02

- annual mass vaccination for at least 3 years
- free of charge
- ear notching
- local planning of vaccination campaigns – community meetings, timing with cattle movements
- CAHWs carried heat stable vaccine to cattle camps – up to 30 days outside cold chain
- supervision
- sero-monitoring
- rinderpest outbreaks widespread in 1993, reduced over the years, only one outbreak in 1998



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Challenges

- Security
- Extreme weather conditions
- Famine
- Human disease
- Lack of infrastructure
- Limited transport
- Limited communications
- Limited resources
- Technical;
  - cattle numbers, migration
  - cold chain
  - other priorities
  - appropriate equipment
  - laboratory services

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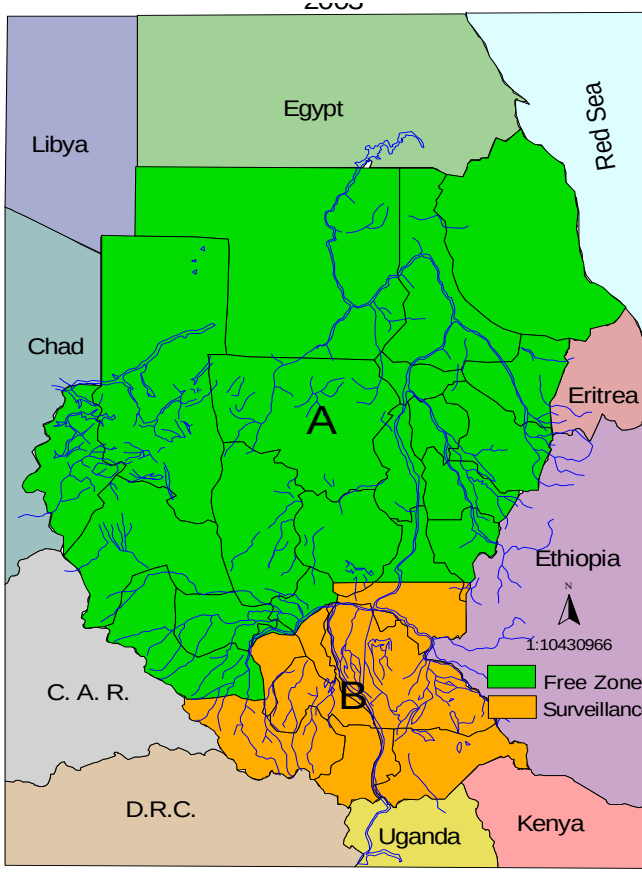
OIE pathway – demonstrating freedom from infection

- Five years of disease freedom, no vaccination with;
  - outbreak reporting system
  - investigation and lab diagnosis of outbreaks
  - random sample surveys - clinical disease
  - purposive surveys in high risk areas - clinical disease, serology, wildlife
  - random sample serological surveys in final two years

Demonstrating freedom 2002-07

- 2001 plan: AU-IBAR PACE Programme, Gov of Sudan and FAO
  - Zonation
  - Stop vaccination by mid-2002
  - Five years surveillance
    - 3 years – reporting and investigation of rinderpest outbreaks, active clinical surveillance
    - final 2 years – sero-surveillance
- VSF Belgium contracted by to co-ordinate and implement in the SPLM-administered areas in the south
  - focus on ending vaccination, establishing surveillance system, emergency-preparedness
  - within OLS framework, after 2005 in partnership with Government of Southern Sudan MARF
- FMARF implemented northern PACE Sudan project



Strategy

- Integration of rinderpest eradication activities into community-based animal health service
- Collaboration and co-ordination with all other livestock agencies
- Strengthening network of animal health workers
  - 1500 CAHWs, 200 AHAs, 40 vets
- Promoting participation of all stakeholders
- Training and awareness raising
  - community dialogue guidelines, CAHW training module, training course for AHAs and vets
- Appropriate communication methods for awareness-raising:
  - cloth flip charts, photo-cards, posters, songs, t-shirts
- Motivation of animal health workers; payments, reward

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Surveillance system

- Objectives
  - detect any remaining foci of rinderpest
  - provide evidence of freedom from rinderpest (meeting requirements of OIE)
- Adapted surveillance methods – pastoralist communities, CAHW/AHA network
  - Outbreak reporting and investigation
  - Active clinical surveillance
  - Wildlife surveillance
  - Serological surveillance

Cloth flip charts for community meetings – clinical signs, reporting outbreaks

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Outbreak reporting and investigation

- All stakeholders encouraged to report outbreaks
- Investigation – animal health worker, vet
- Sampling kits
- Penside tests
- Samples to RP reference laboratories

Reward 1000 US$

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Active Clinical Surveillance

- Cattle camp surveillance; visits by AHAs
  - livestock keeper interviews
  - observation of herd
- Market surveillance; visits by AHAs
  - livestock keeper/trader interviews
  - observation of cattle on sale

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Participatory Disease Searching

- Targeted “high rinderpest risk” areas
- Team of CAHWs, AHAs, led by vet
  - animal health workers; key informants, liaison, translators
- Duration 1-3 weeks
  - semi-structured group interviews, mapping, timelines, ranking
  - observation of cattle, sampling of clinical cases

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Wildlife surveillance: Boma National Park 2004

- PACE wildlife specialist, NGOs, wildlife personnel, animal health workers
- Local information – locate wildlife
- 48 blood samples collected from white-eared kob, buffalo, eland and roan antelope
- RP and PPR cELISA

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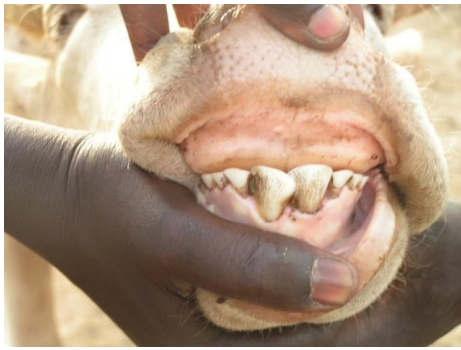
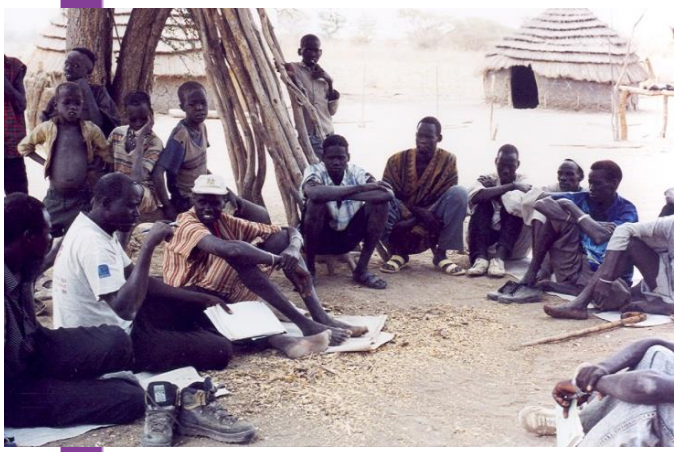
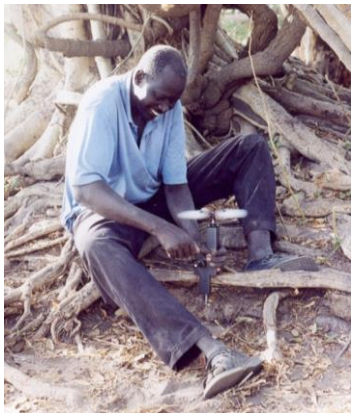
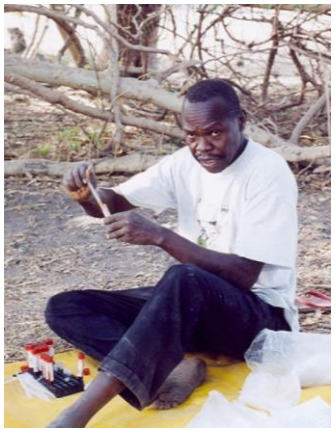
Serological surveys 2005-6, 2006-7

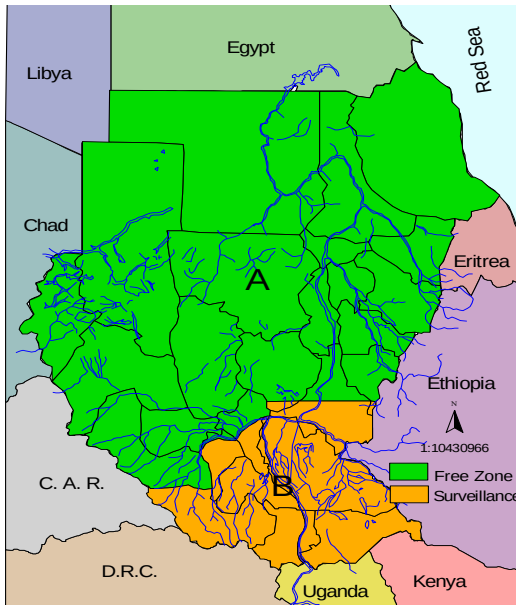
- Objective: to demonstrate absence of infection
- Survey design:
  - 2 strata, random sample of 314 herds per stratum (95% confidence level, expected prevalence 1%),
  - 25 samples per herd (2-3 yr cattle) (95% confidence level, expected prevalence 20%, test sensitivity 70%)
- Sampling frame; dry season cattle camps, villages
- Field teams; vets, AHAs and CAHWs
- dialogue with livestock keepers, ageing, blood sampling, ear-tagging











Surveillance Results

		2002	2003	2004	2005	2006	2007 (Jan-June)
Outbreak reporting & investigation	All diseases	98	116	84	56	22	8
	Rinderpest-like disease	24	21	10	13	2	0
Clinical surveillance	Cattle camp visits		3,756 cattle camps, 2.7 million cattle observed				
	Market visits		1,603 market visits to 106 markets, 50,000 cattle observed				
Participatory disease searching	No areas No villages/cattle camps No herds No cattle observed	(northern sector)		17 246 2,525 67,150			6 26 334 39,417
	No areas No villages/cattle camps No herds No cattle observed	(southern sector)	3 14 361 165,513	5 32 1000 77,600	2 8 87 10,000		
Wildlife surveillance							
Serological survey	Stratum A				5+ve /948 sera	0+ve/ 1090 sera	
	Stratum B					4+ve/7894 sera	4+ve/778 2 sera
Monthly reporting							

Surveillance Results

		2002	2003	2004
Outbreak reporting & investigation	All diseases			84
	Rinderpest-like disease	24	21	10
Clinical surveillance	Cattle camp visits			
			million cattle observed	
	Market visits		1,603 market visits to 106 markets, 50	
Participatory disease searching	No areas No villages/cattle camps No herds No cattle observed	(northern sector)		17 246 2,525
	No areas No villages/cattle camps No herds No cattle observed	(southern sector)	3 14 361 165,513	5 32 1000 77,600
Wildlife surveillance				
Serological survey	Stratum A			
	Stratum B			
Monthly				

- Confirmed as other disease (MCF, HS, FMD, ECF etc.)
- Individual RP-like cases
- Rumours, false alarms

- no current clinical rinderpest
- a range of other common diseases recorded

- No current clinical rinderpest
- individual clinical cases sampled
- reports of recent rinderpest investigated

- 48 samples rinderpest -ve

- no evidence of rinderpest
- positive cattle followed up

Overall – in five year period since ending vaccination in June 2002 to June 2007, no evidence of recent or current rinderpest virus circulation

- Provided data for FMARF's application to OIE for recognition of freedom from rinderpest 2007

- **In 2008, Sudan recognised by OIE as free from rinderpest**

OIE

Organisation Mondiale de la Santé Animale | World Organisation for Animal Health | Organización Mundial de Sanidad Animal

Certificate

Rinderpest status of Sudan

This is to certify that following a recommendation of the OIE Scientific Commission for Animal Diseases, the International Committee of the OIE approved on 30 May 2008 that Sudan be recognised by the OIE as free from rinderpest in accordance with the provisions of Article 2.2.12.2. of the OIE Terrestrial Animal Health Code.

This recognition is based on the documentation submitted to the OIE by the Official Veterinary Services of Sudan. The Delegate of Sudan to the OIE has the obligation to notify the OIE immediately of any epidemiological event relating to rinderpest in Sudan and to confirm annually that the epidemiological situation has remained unchanged.

Barry O'Neil
President

Bernard Vallat
Director General

Paris, 30 May 2008

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Discussion

- Network of **CAHWs and AHAs**
- **Motivation** of animal health workers;
  - training, information, feedback, incentives
- **Stakeholder coordination and collaboration**
  - promoting and maintaining **participation**, **common goal**
- **Communication;**
  - awareness and training, information sharing
- **Understanding of context**
  - culture, livestock production system, diseases, local knowledge and practices
- **Flexibility;**
  - constant changes, adaptation, rapid decision-making, resource mobilisation
- **Expert support;**
  - appreciation of difficult conditions

Acknowledgements

- VSF Belgium Rinderpest Project personnel
- CAHWs, AHAs, Stockpersons and Vet Assistants, field veterinarians
- livestock keepers of southern Sudan
- ACORD, ACROSS, ADRA, CARE, COOPI, CDOT, NCDS, NPA, Oxfam-GB, SC-UK, VSF Germany, VSF Suisse, Vetwork Services Trust, ZOA
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- Ministry of Animal Resources and Fisheries, Republic of South Sudan
- FAO South Sudan
- Federal Ministry of Animal Resources and Fisheries, Government of Sudan
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