

The background of the slide is a photograph showing a landscape with a fence in the foreground and trees in the background. The fence appears to be made of wire mesh or barbed wire. The ground is dry and yellowish, suggesting a semi-arid environment. There are green trees and bushes in the distance. The sky is overcast.

# Land use at the wildlife - livestock interface: Consequences for the GLTP

**Ignas Heitkönig**

**Cheryl McCrindle**

**Resource Ecology Group  
Wageningen University  
The Netherlands**

**Section Veterinary Public Health  
Department of Paraclinical Sciences  
University of Pretoria, RSA**

# Contents



**Livestock diseases in SE Zimbabwe**



**Global agreements**



**Local responses**



**Local resource use & mis-use**



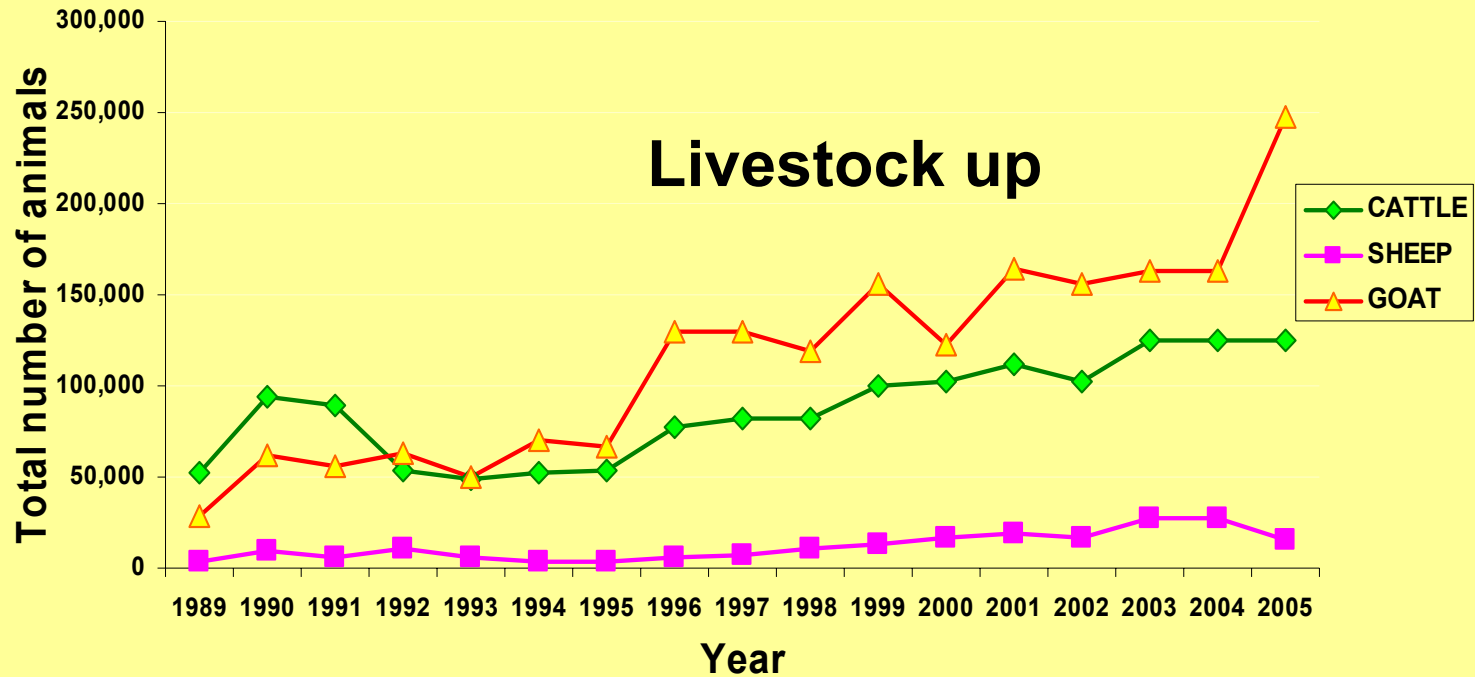
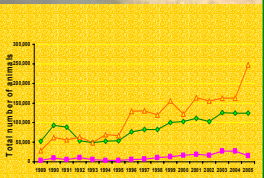
**Competing claims on natural resources**

# Source: Cumming (2003) What options for SEL?



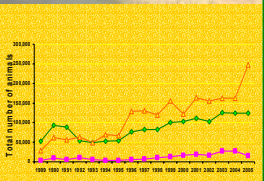
Land category	% of area	People/km <sup>2</sup>
Communal Land	44.2	11–52
Large-scale commercial farm land		
Irrigation	<0.01	?
Cattle ranches	16	<3
Wildlife + cattle	9	<3
Conservancies	13	<3
Small-scale commercial farm land	0.5	10
Resettlement land (in 2000)	5.8	?
Parks and wildlife estate	11.5	<1
<b>Total (50 000 km<sup>2</sup>)</b>	<b>100</b>	–

# Source: unpubl scoping study, SE Lowveld



- Fences “re-cycled” as snares
- Game poached → biltong → SA
- Livestock breeds mix
- Diseases spread, including FMD, Zimbabwe-wide
- Cattle trade with Mozambique
- Veterinary services stopped

# Treatments



**“PANADO” (paracetamol)**

**Pain, headache**

**Treatments against livestock disorders:**

**“Mixture of Coca-cola and soot”**

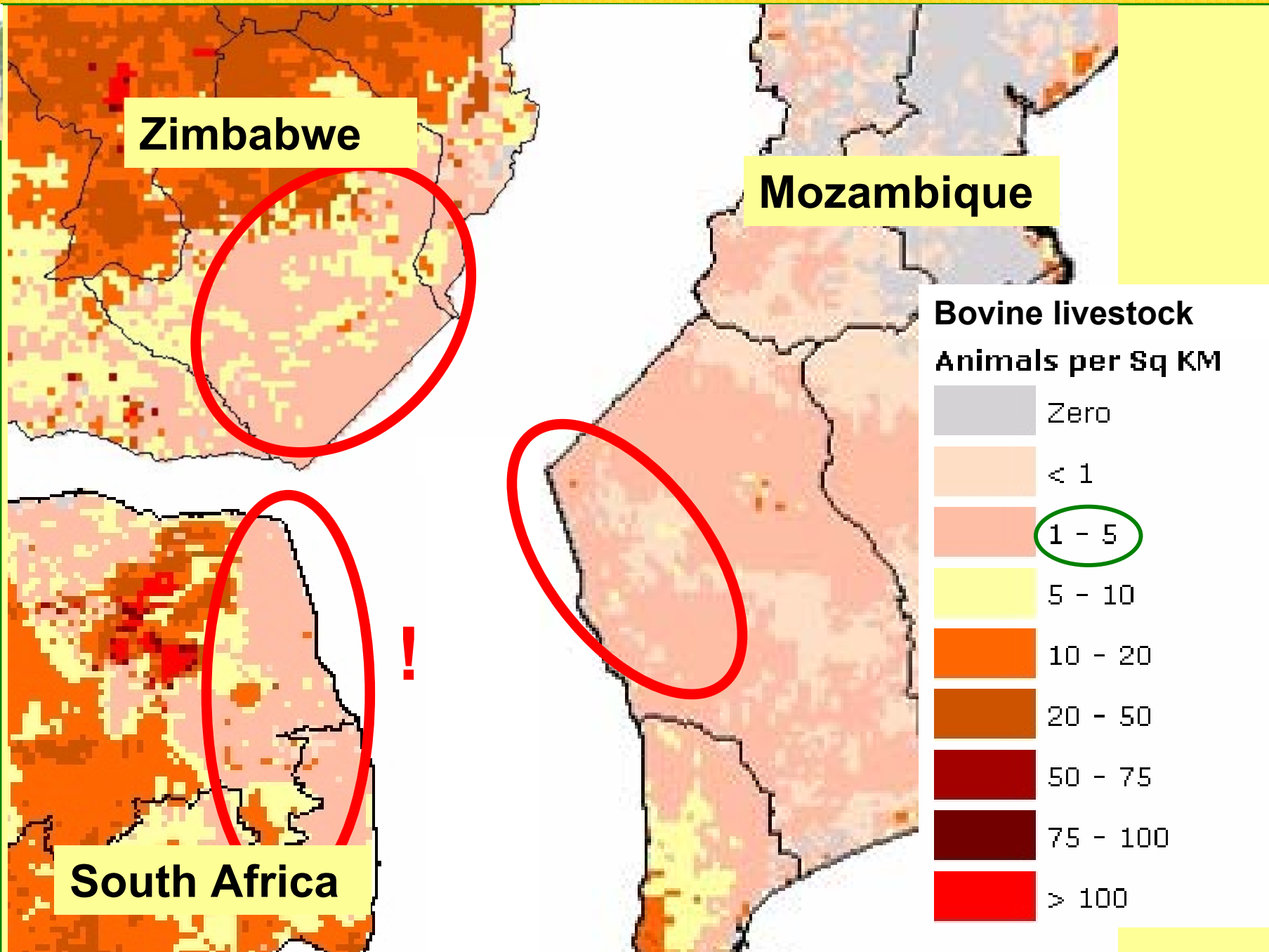
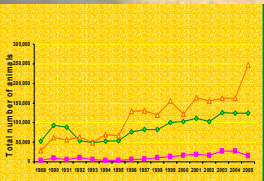
**?**

**“Mixture of bicarbonate of soda, salt and *chiovolo*”**

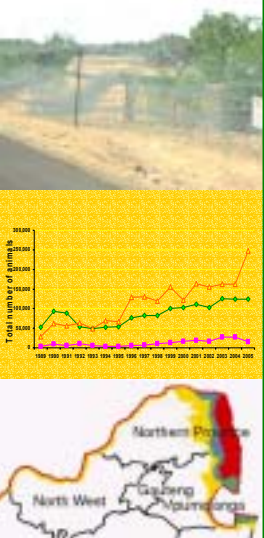
**?**

**Hand in to Nicky**

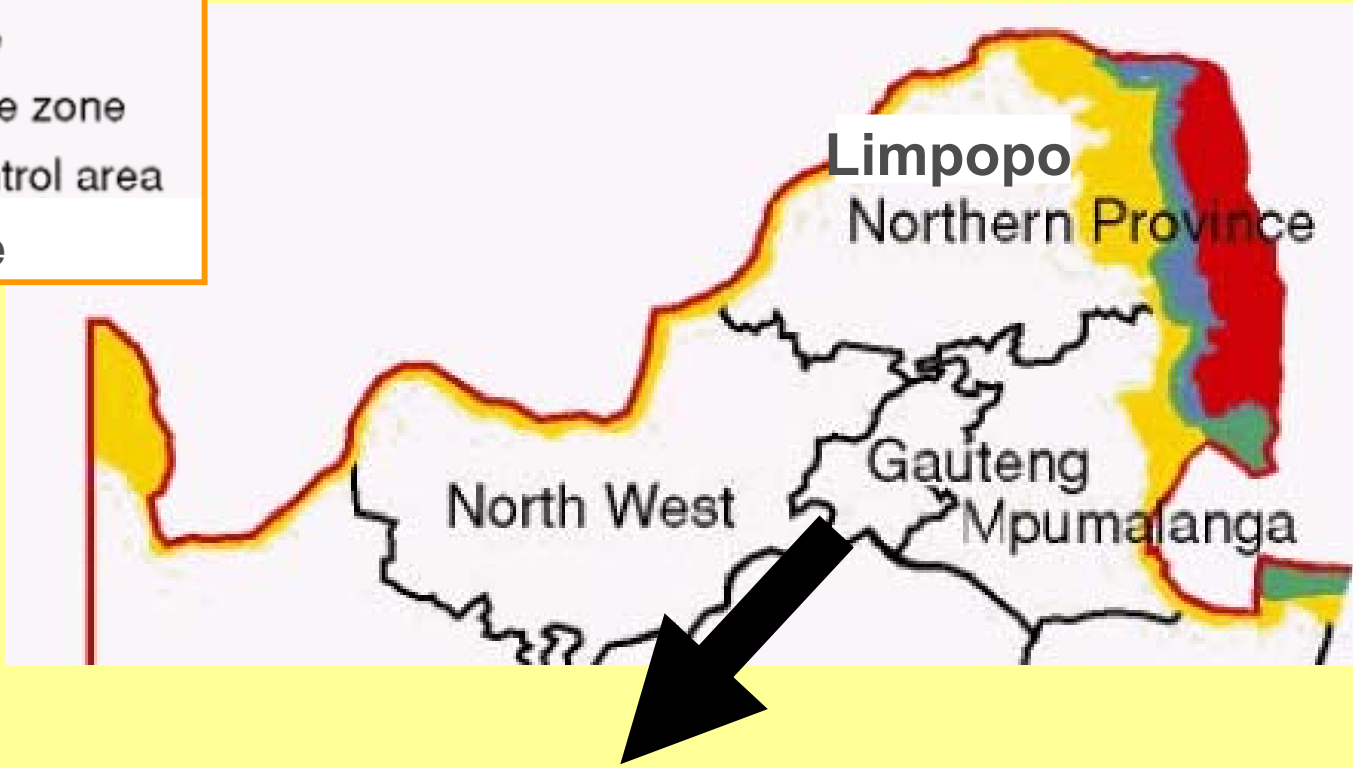
# Source: FAO Country profiles & mapping information system



# IOE zonation enables cattle export

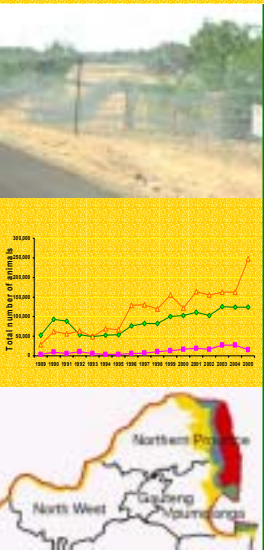


- Infected zone
- Buffer zone
- Surveillance zone
- Rest of control area
- Free zone



**Free zone (white):** a zone with demonstrated absence of specified disease (*OIE - Terrestrial Code procedures*), enabling international trade

# IOE zonation enables cattle export



**Zone**

**FMD Infected**

**Buffer**

**Surveillance**

**Control**

# Foot and mouth disease (FMD)

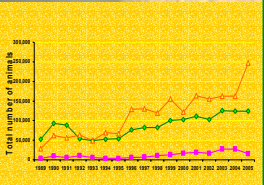
FMD endemic in buffalo in KNP and surrounding game parks

Last outbreak in cattle: Aug - Oct 2006

- location: buffer zone
- 1300 susceptible bovines, 41 cases, ca. 5 deaths
- affected animals not destroyed or slaughtered
- source: wild animals

Control measures @ US\$ 30 000 000 /yr:

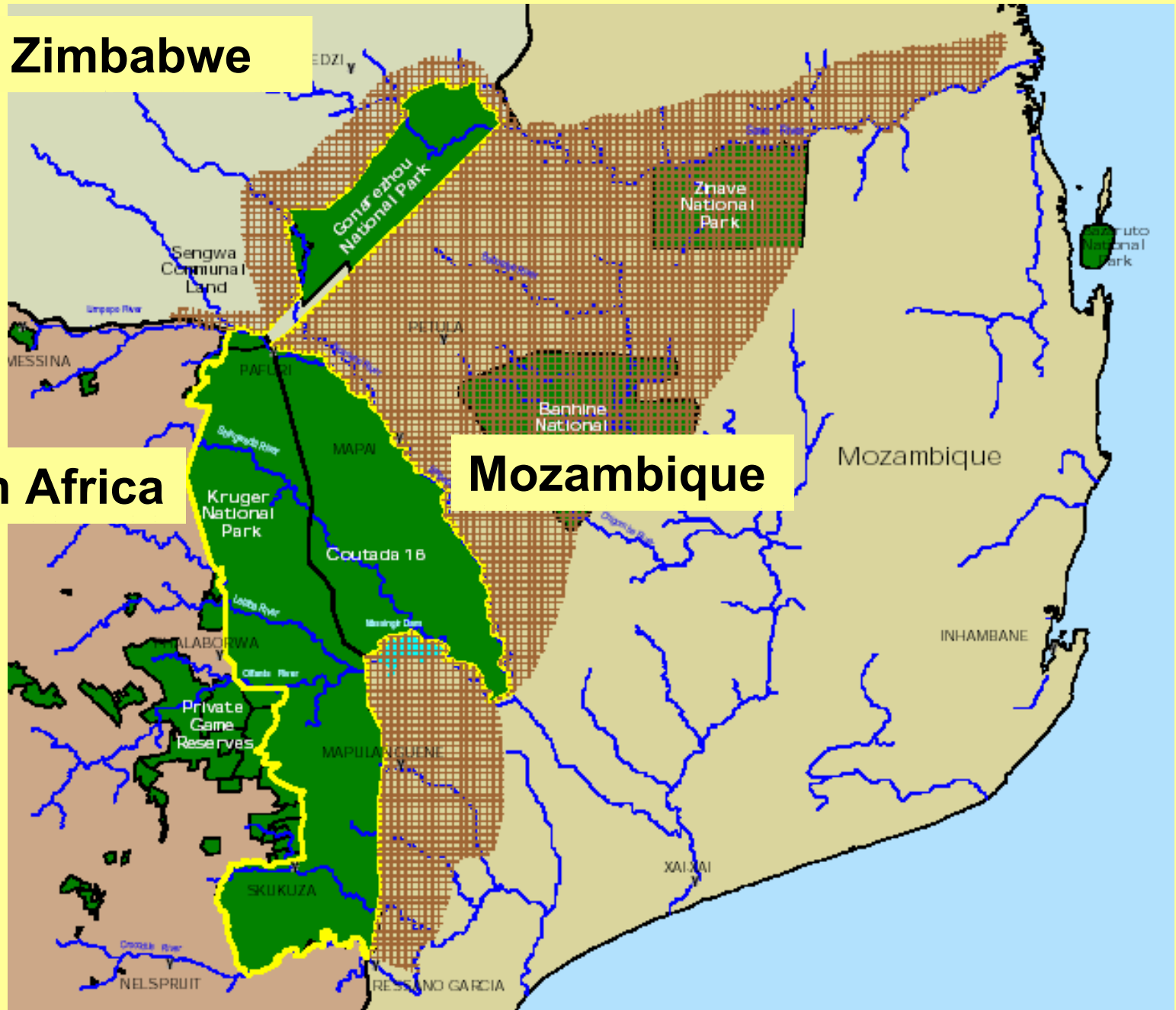
1. control of wildlife reservoirs
2. quarantine
3. screening
4. vaccination
5. disinfection of infected remises/establishment(s)



# WTO agreements a.o. impact on land use



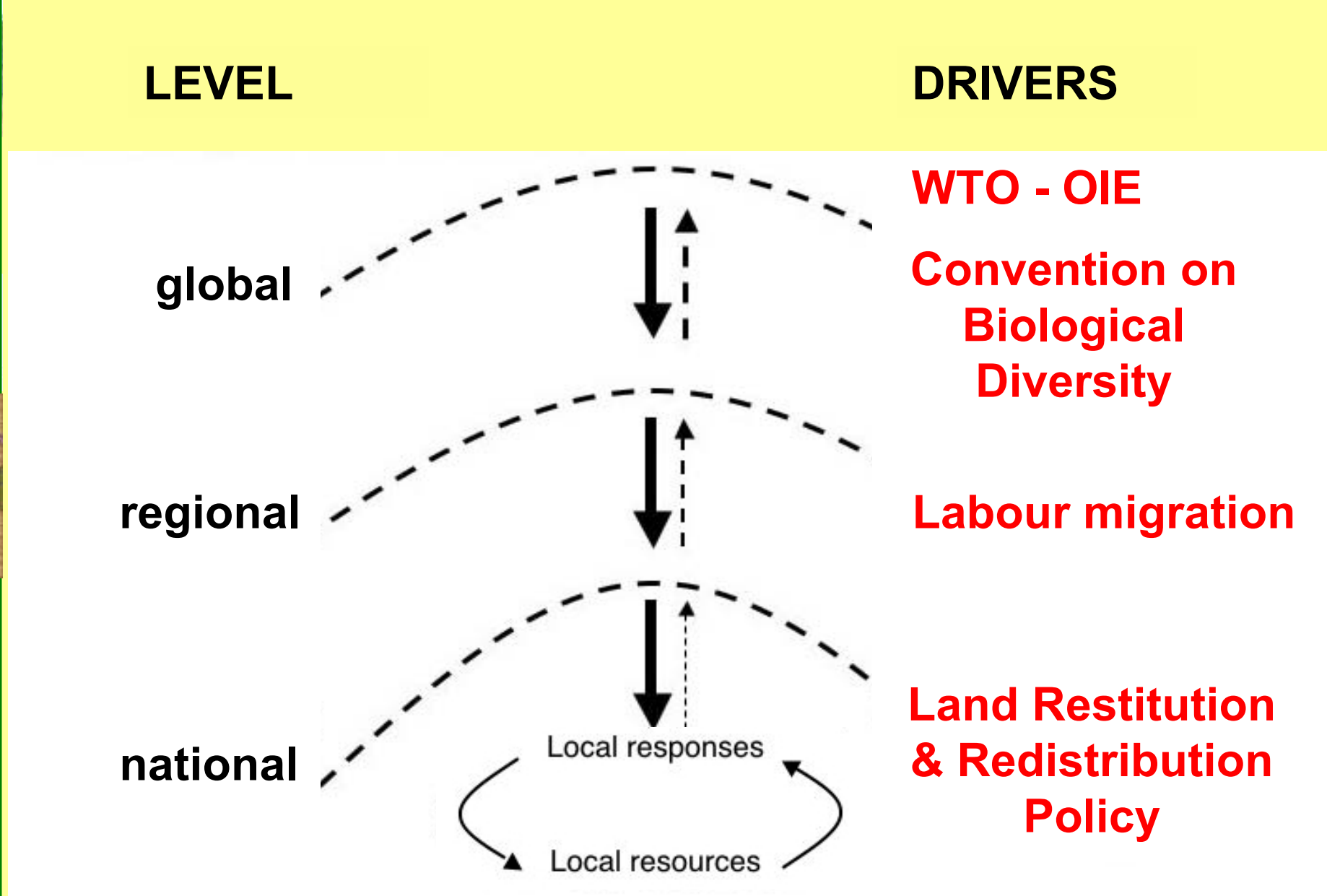
**Zimbabwe**



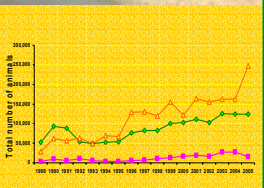
**South Africa**

**Mozambique**

# Nested drivers - local responses



# Implications of Global Drivers (OIE)



## **Pro:** GDP

- Fenced off areas, rest of country FMD-free and can export
- High prices for livestock

## **Con:** zone inhabitants

- Fences prevent movement of cattle = far less income from cattle behind fences
- Fences prevent migration of game

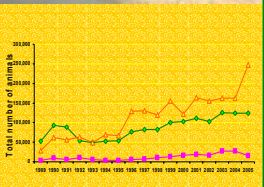
# GLTP implementation

## Expectations:

- local communities involved in GLTP development
- stakeholder participation
- benefits from eco-tourism
- constraining of subsistence agriculture & livestock

## But:

- local stakeholders experienced few consultations
- limited wildlife benefits for local communities
- veterinary fences impede trade & dispersal
- competing claims: **conservation** ↔ **other land uses**



# New research program

## Competing Claims

## On Natural Resources

Overcoming mismatches  
in resource use through  
a multi-scale perspective



# “Competing Claims on Natural Resources”

## Aim:

contribute to sustainable and more equitable use of natural resources, with a focus on poverty alleviation and development of novel, local options for spatial planning and management

## Through:

developing integrative methodologies of natural and social sciences that can support adaptive management in complex social and ecological settings.



# “Competing Claims on Natural Resources”

- Applied Research Program (2007-2010)
- Multi-disciplinary
  - Resource ecology
  - Agronomy
  - Livestock science
  - Veterinary science
  - Sociology
  - Communication science
  - Environmental economics
  - Remote sensing & GIS
- 12 PhD students
  - RSA, Zimbabwe, Mozambique, Botswana, NL, USA
  - Two disciplines per PhD student
- Co-operation & experience sought from
  - AHEAD a.o.
  - KNP :-)

*Suite of methodologies*



# CCNR Partners

**The Netherlands:**

**Wageningen University, ITC**

**South Africa:**

**Wits, ARC, UP, UG**

**Zimbabwe:**

**UniZim, CIFOR**

**Botswana:**

**Univ. Botsw, HOORC**

**Mozambique:**

**EMU**

*Programme leader*

Ken Giller

Plant Production Systems, WU

tel: +31 317 485818

fax: +31 317 484892

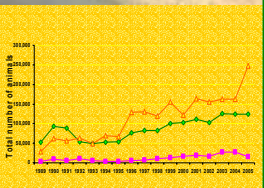
mail: [ken.giller@wur.nl](mailto:ken.giller@wur.nl)

*Regional Coordinator Southern Africa*

Jens Andersson

tel: +27-72 6252757

mail: [jens.andersson@wur.nl](mailto:jens.andersson@wur.nl)



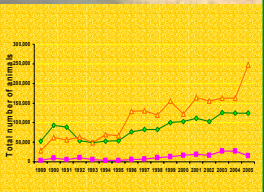
# Acknowledgements

**Xavier Poshiwa**

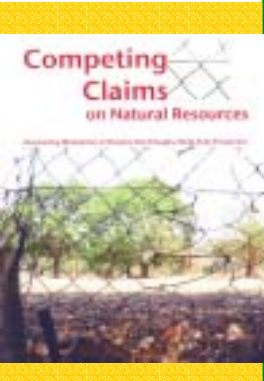
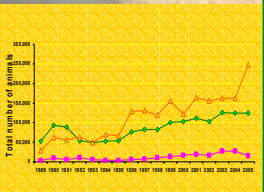
**Ken Giller**

**Nicky Knox**

**50+ colleagues, students**



# Treatments against livestock disorders:



**“Mixture of Coca-cola and soot”**

**Roundworms**

**“Mixture of bicarbonate of soda, salt and *chiovolo*”**

**Foot and mouth disease**



Hoping to learn from you,  
thank you



**FMD Infected Zone:** KNP, 2.4 m electrified fence, regular game inspections, suspect FMD cases → state veterinarian

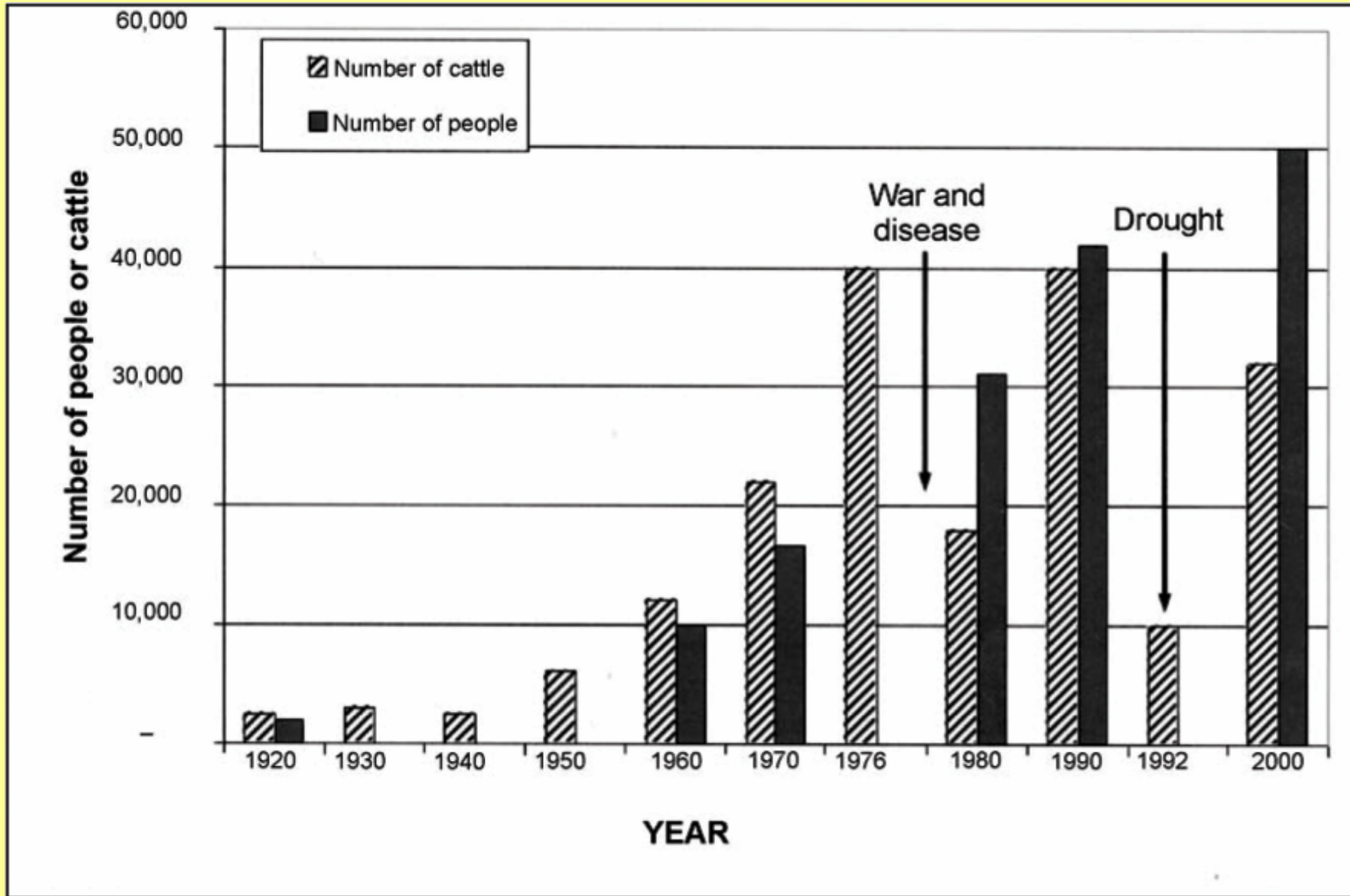
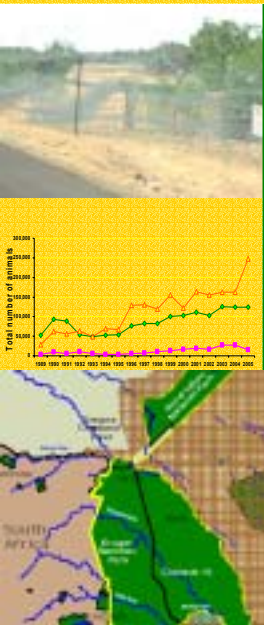
**Buffer Zone:** 10 to 20 km wide, all cattle (70 000 head) vaccinated @ 6 months, inspected for FMD every week,

**Surveillance Zone:** 10 km wide, all cattle inspected @ 14 days, no FMD vaccination permitted

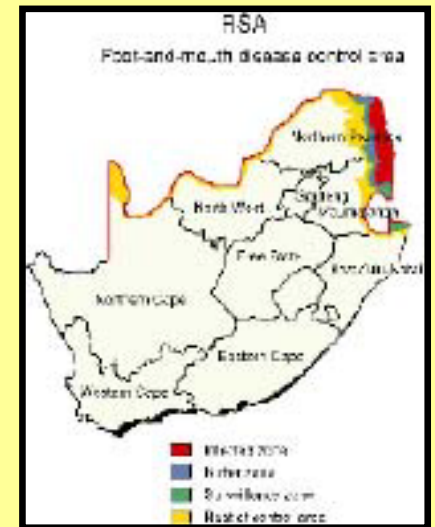
**Control zone:** extra protection zone, > 10 km wide, along surveillance zone and the borders with Swaziland, Botswana, Zimbabwe and Mozambique, cattle are inspected every 28 days.



# Cumming 2003: What options for South Eastern Lowveld?



# Buffer zones



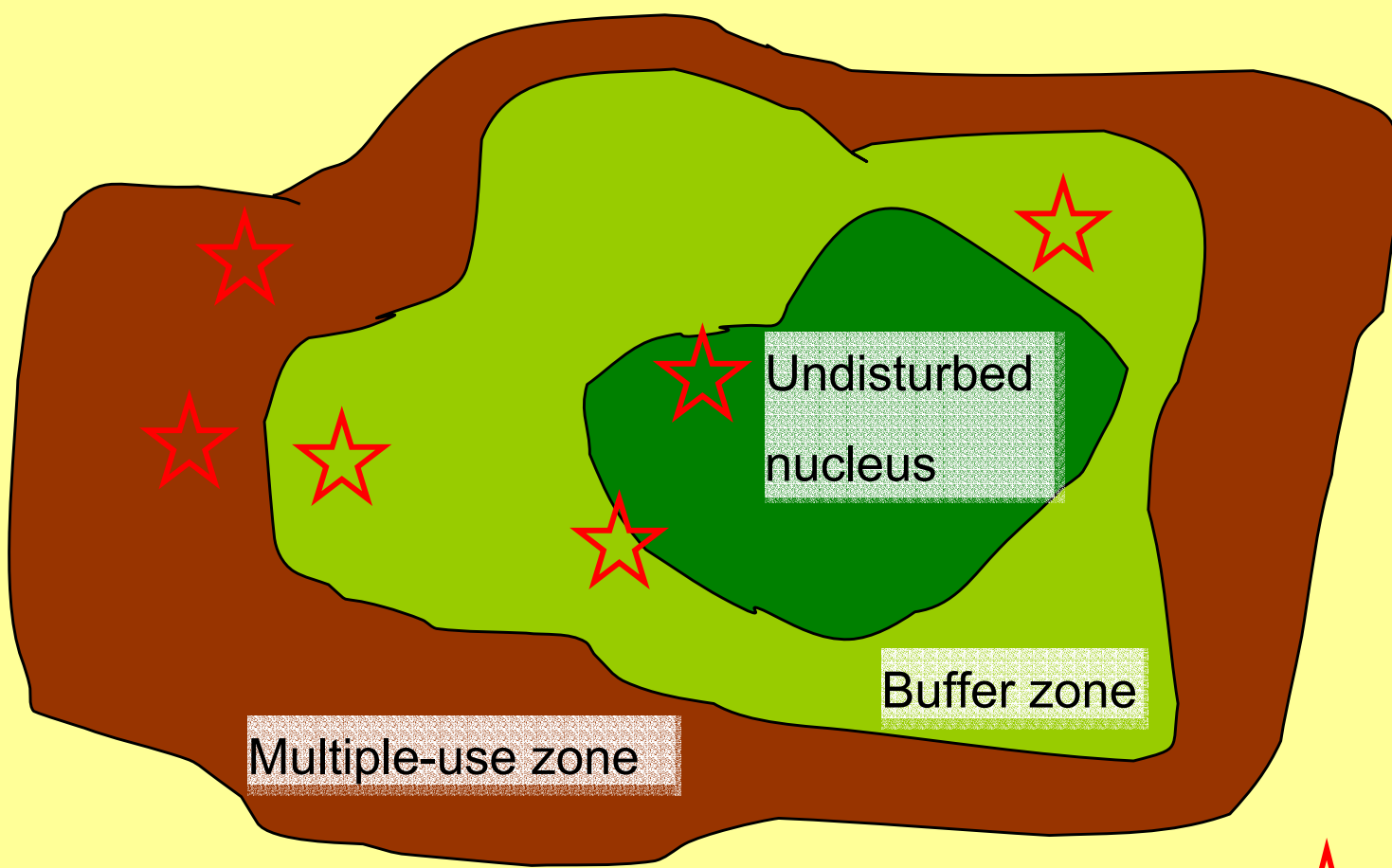
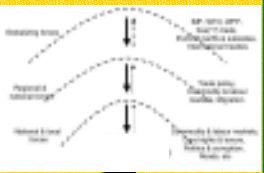
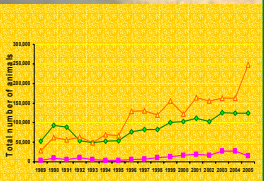
## Advantages of buffer zone:

- It makes it possible to keep buffalo and other wildlife in reserves where otherwise they would have to be slaughtered out because they are carriers of F&M
- OIE will declare the rest of SA free of F&M if there are buffer zones – this allows for international trade and has economic benefits for the agricultural sector

## Disadvantages of the buffer zone

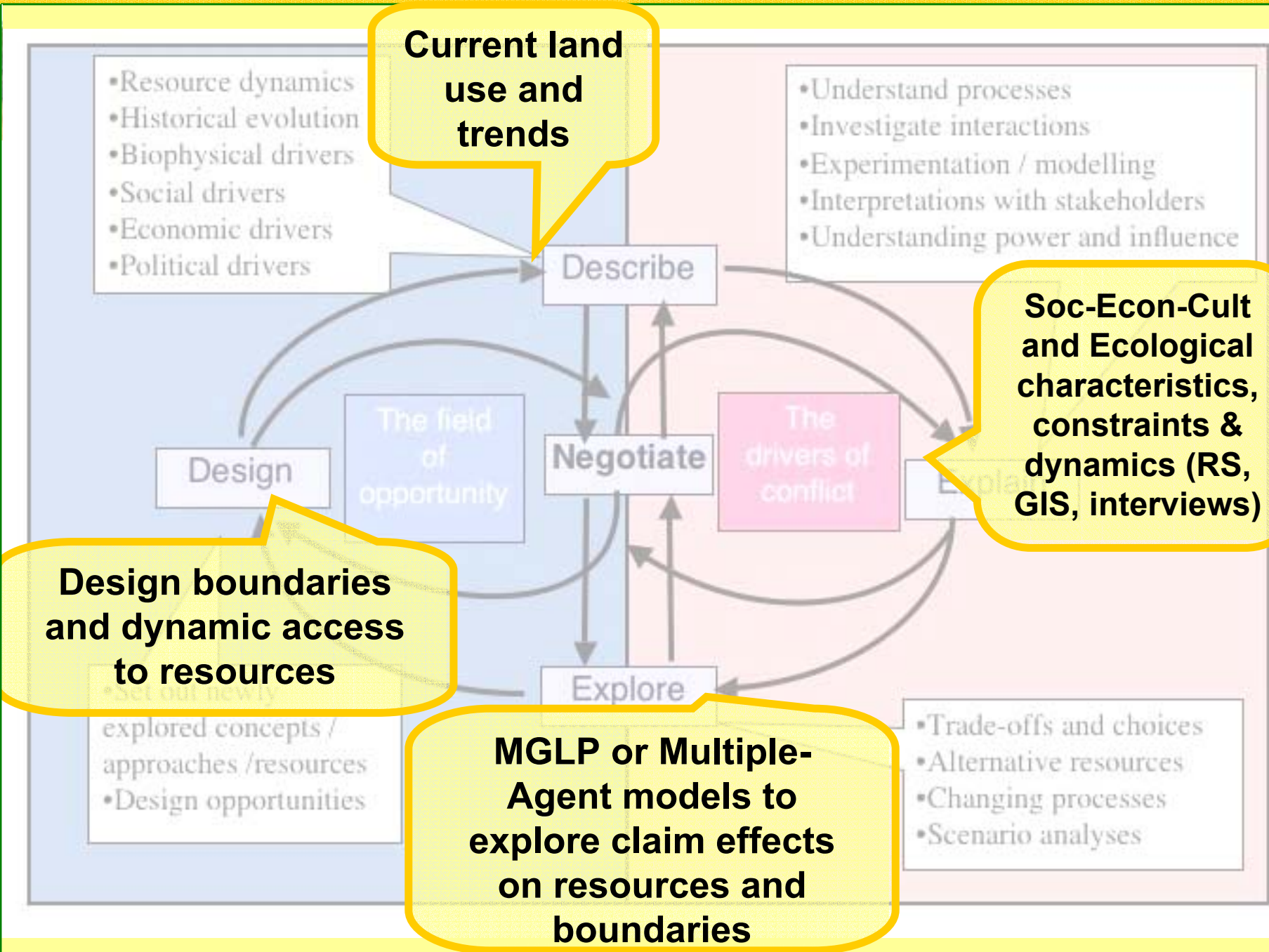
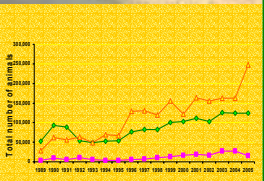
- Small-scale and communal farmers cannot market their animals outside of the buffer zone-economic disadvantage
- Animals from the buffer zone to another zone in search of grazing
- Smuggling animals across has economic benefits

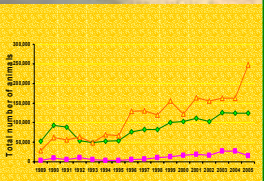
# Typical design for *Integrated Conservation and Development Areas*



 village

(I may decide to re-focus this, with a veterinary focus, or to delete this altogether- this is more or less what is happening – but there are no benefits for those inhabiting the buffer zone – they have restrictions on livestock trade and only promises of possible tourism and jobs )

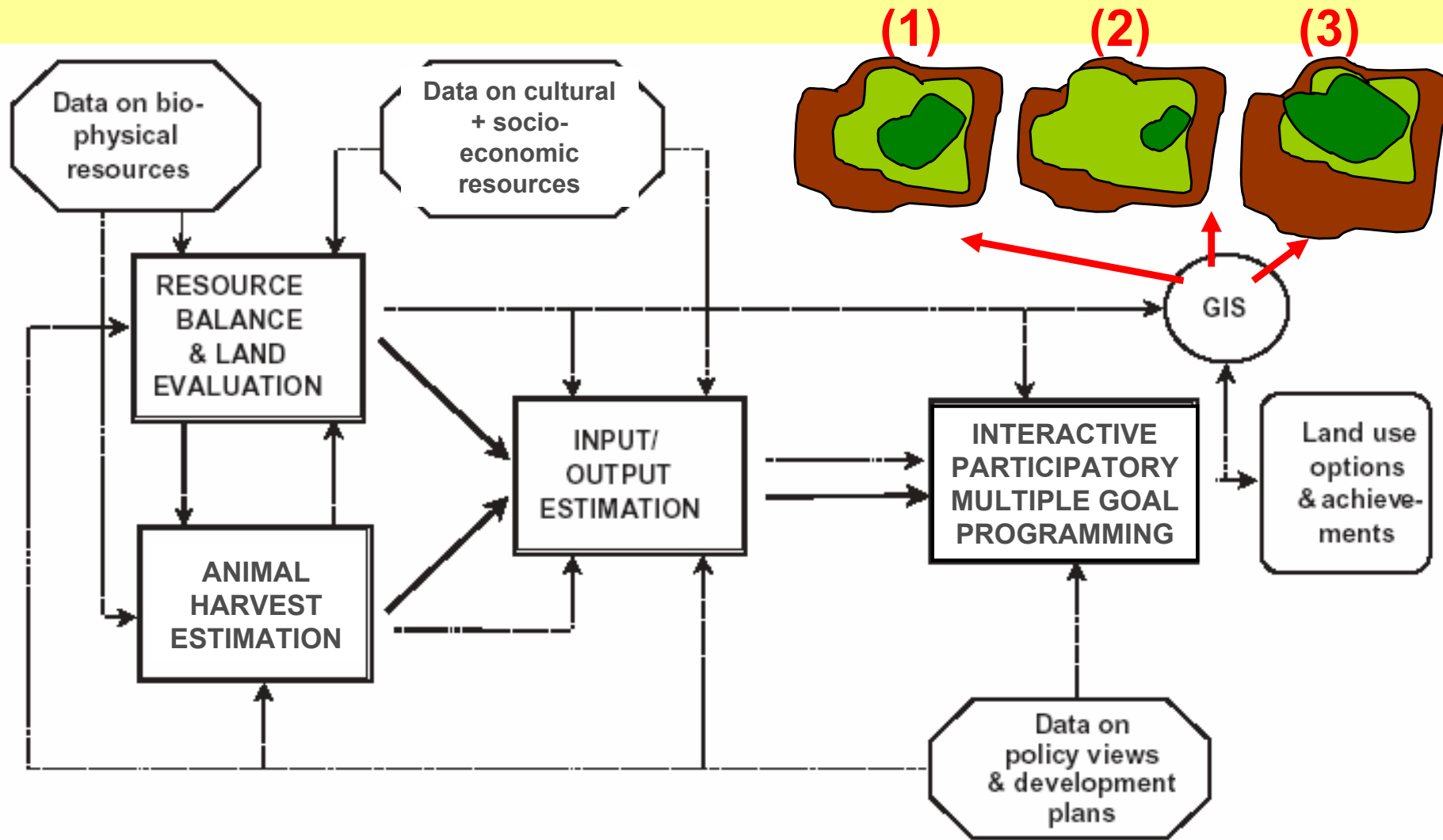




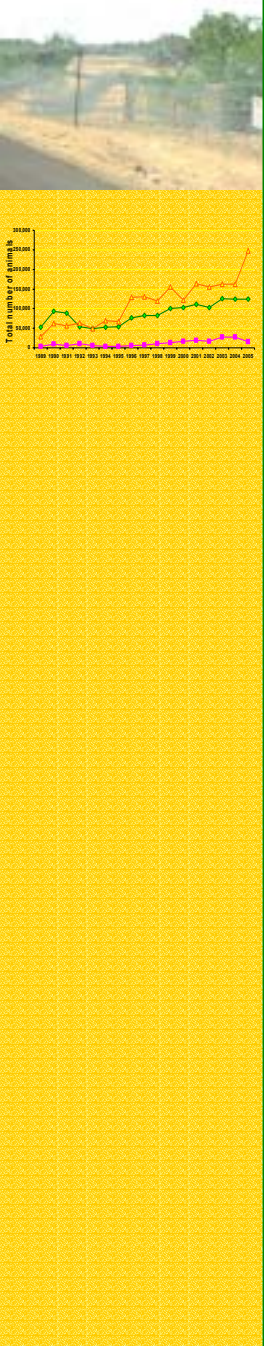
## Methods:

- Track and quantify human land use activities and animal movements (remote sensing, vet. reports)
- Fieldwork on nutrient loads, wildlife harvesting, bushmeat dissemination through networks
- GIS-based model on gains and losses for stakeholders, under various scenarios, with re-drawn fences
- GIS-based model, scenarios, different claim intensities
- GIS-based model, scenarios, envir. contrasts (wet-dry)
- Model “yes” versus “no” co-operation among SH

# Application of Multiple Goal (and/or Multiple Actor) programming



Adapted from Van Ittersum, Roetter *et al.* 2004



# Challenges

**Translating methodology into research questions**

**Bridging gaps among disciplines**

**Increasing trust among disciplines**

**Stakeholder involvement**

