



MEDECINS SANS FRONTIERES
ARTSEN ZONDER GRENZEN

**WATER, HYGIENE AND SANITATION ACTIVITIES FOR
CHOLERA PREVENTION IN COMMUNITIES LIVING
ADJACENT TO LAKE KIVU OR RUSIZI RIVER.
CYANGUGU PROVINCE, RWANDA**

Presented by Peter Maes

WHO & UNICEF CHOLERA CONFERENCE, DAKAR 2008

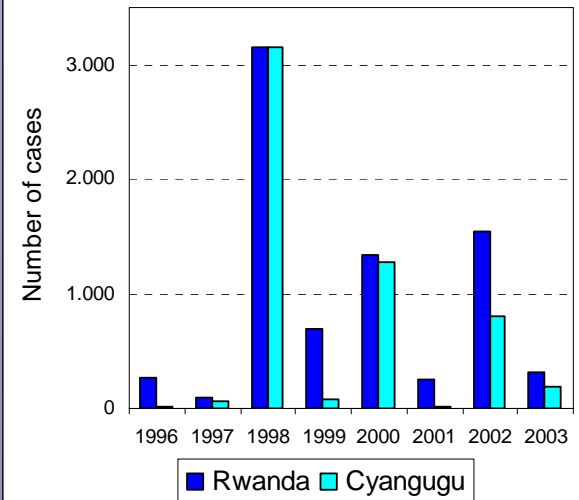
Cholera in Rwanda

SINCE 1994:

- Cholera became endemic in communities surrounding Lake Kivu
- Outbreak mainly in Cyangugu but also Kibuye, Gisenyi and Ruhengeri



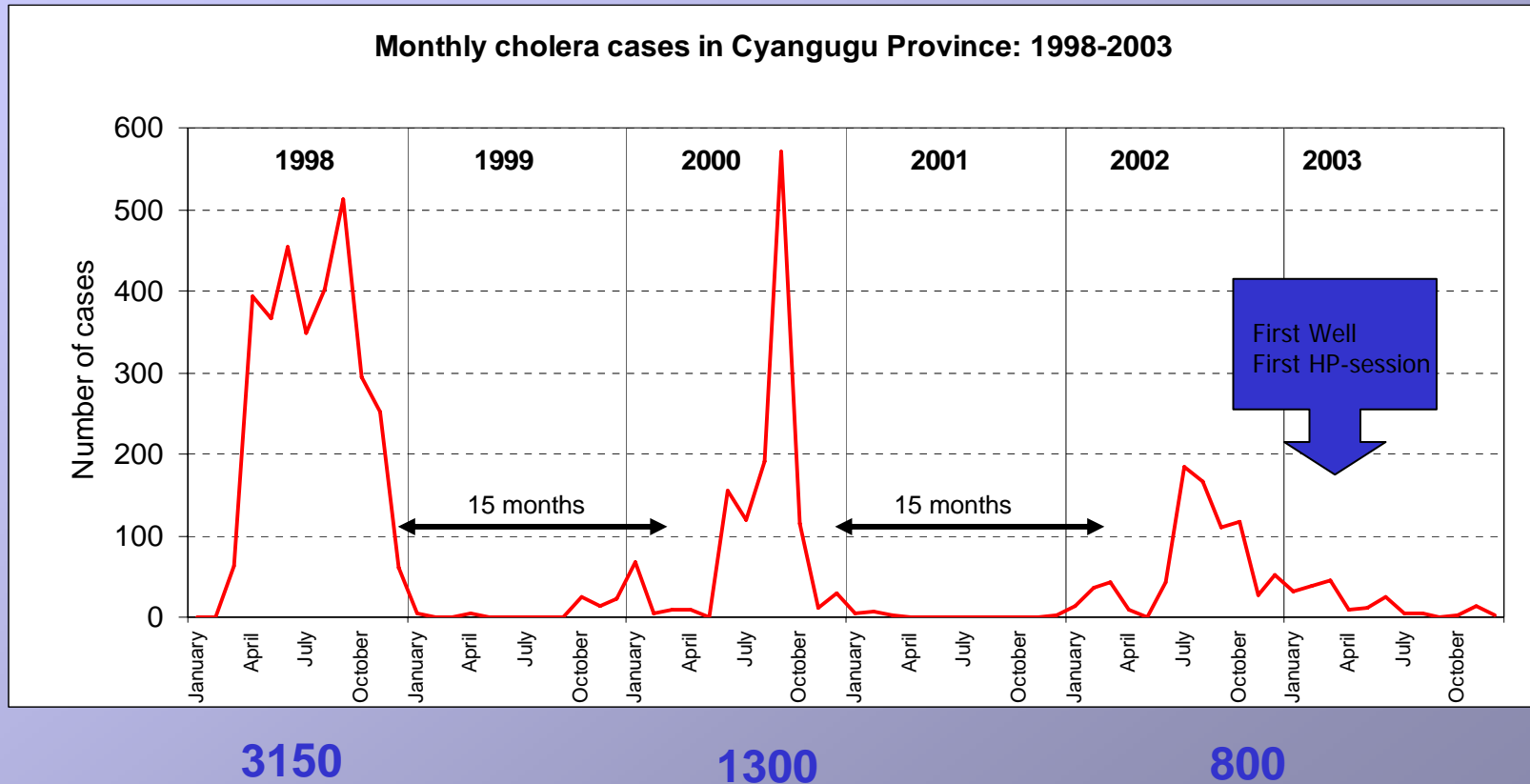
Annual numbers of cholera cases in Rwanda and Cyangugu province: 1996-2003



70 % of all cholera cases in Rwanda have occurred in Cyangugu province

Cholera in Cyangugu (1)

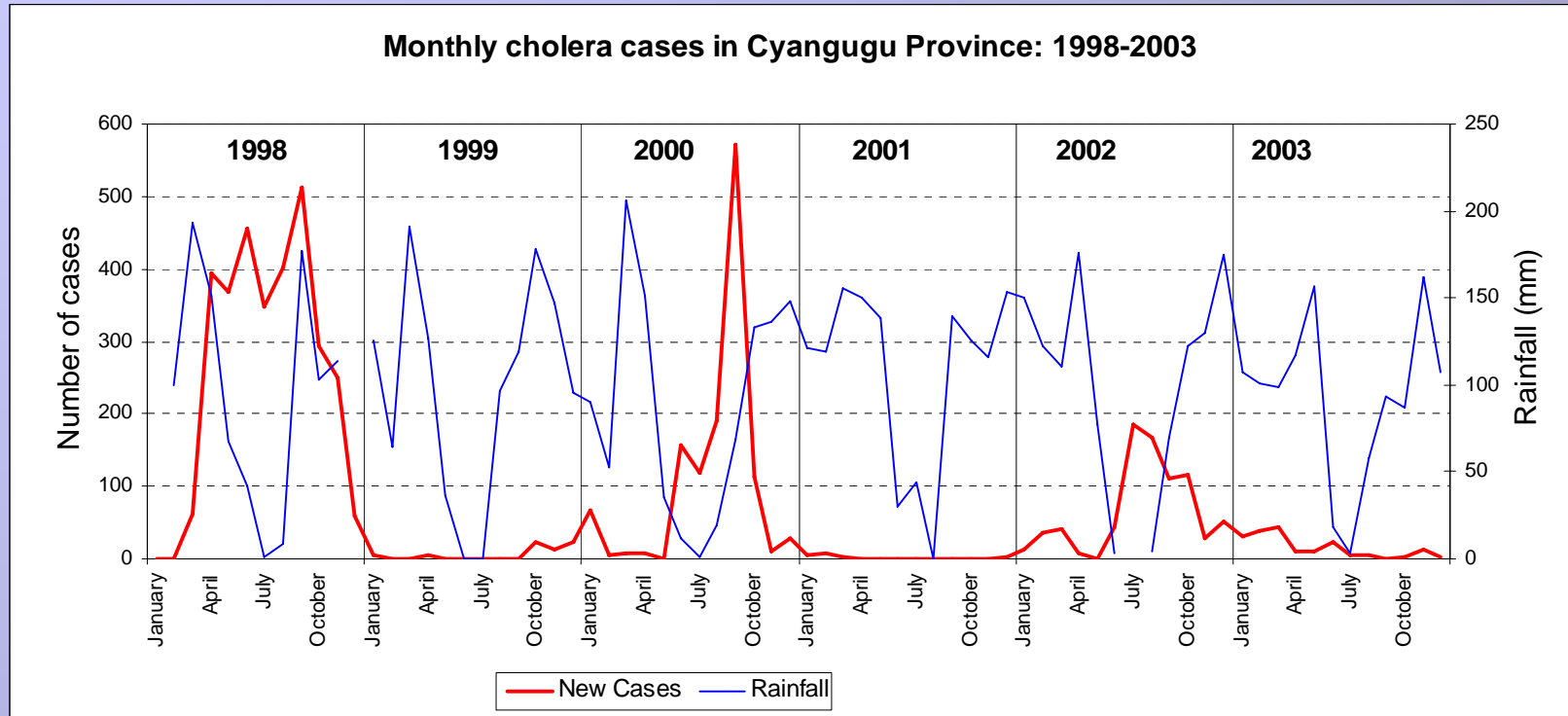
EPIDEMIOLOGICAL CURVE



Expect yearly sporadic cholera cases with outbreaks every 2-3 years depending on herd immunity and environmental factors

Cholera in Cyangugu (2)

TARGET IN TIME: METEOREOLOGICAL FACTORS



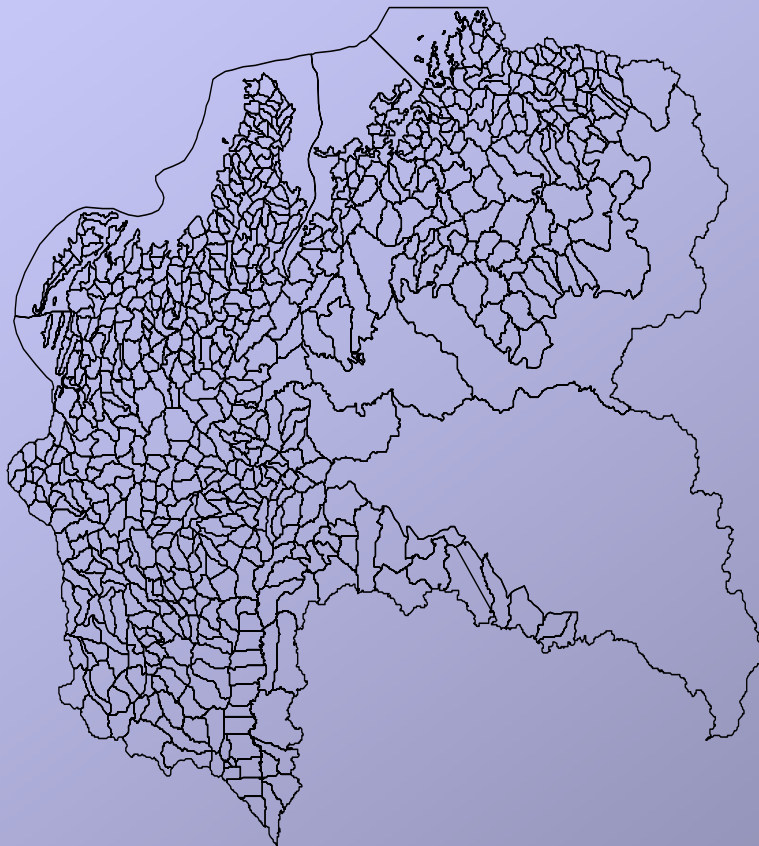
March and June critical months for the flare up of
"wet" and "dry" seasonal pattern

Cholera in Cyangugu (3)

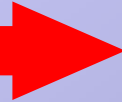
TARGET IN SPACE: (i) IDENTIFY HEALTH CENTRE ZONES

Cellules:

Most detailed
administrative unit

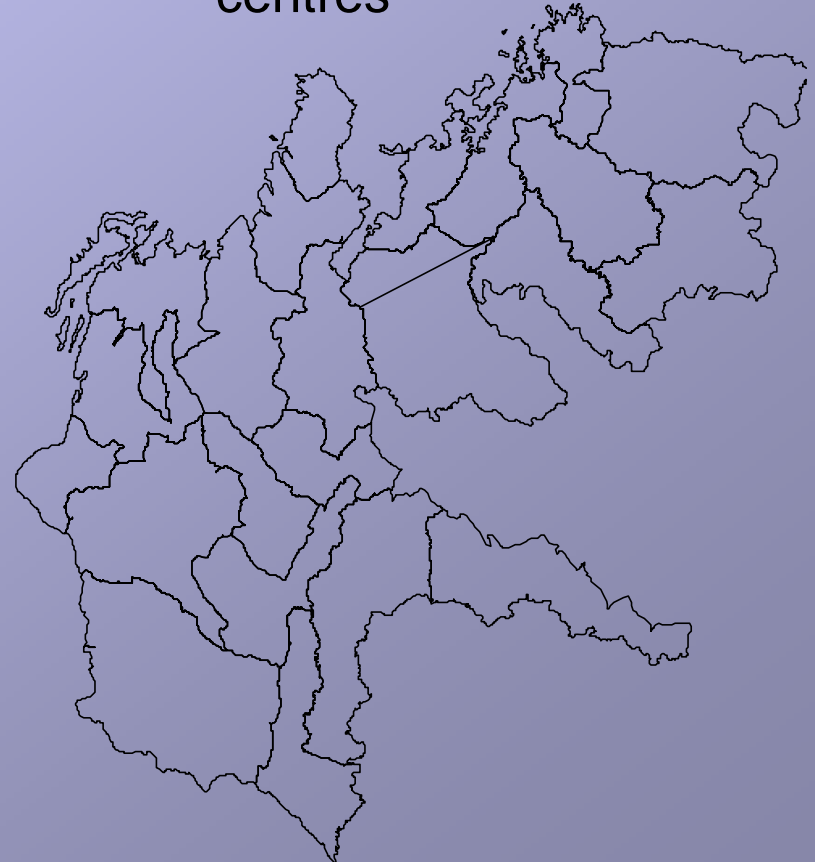


GROUPED



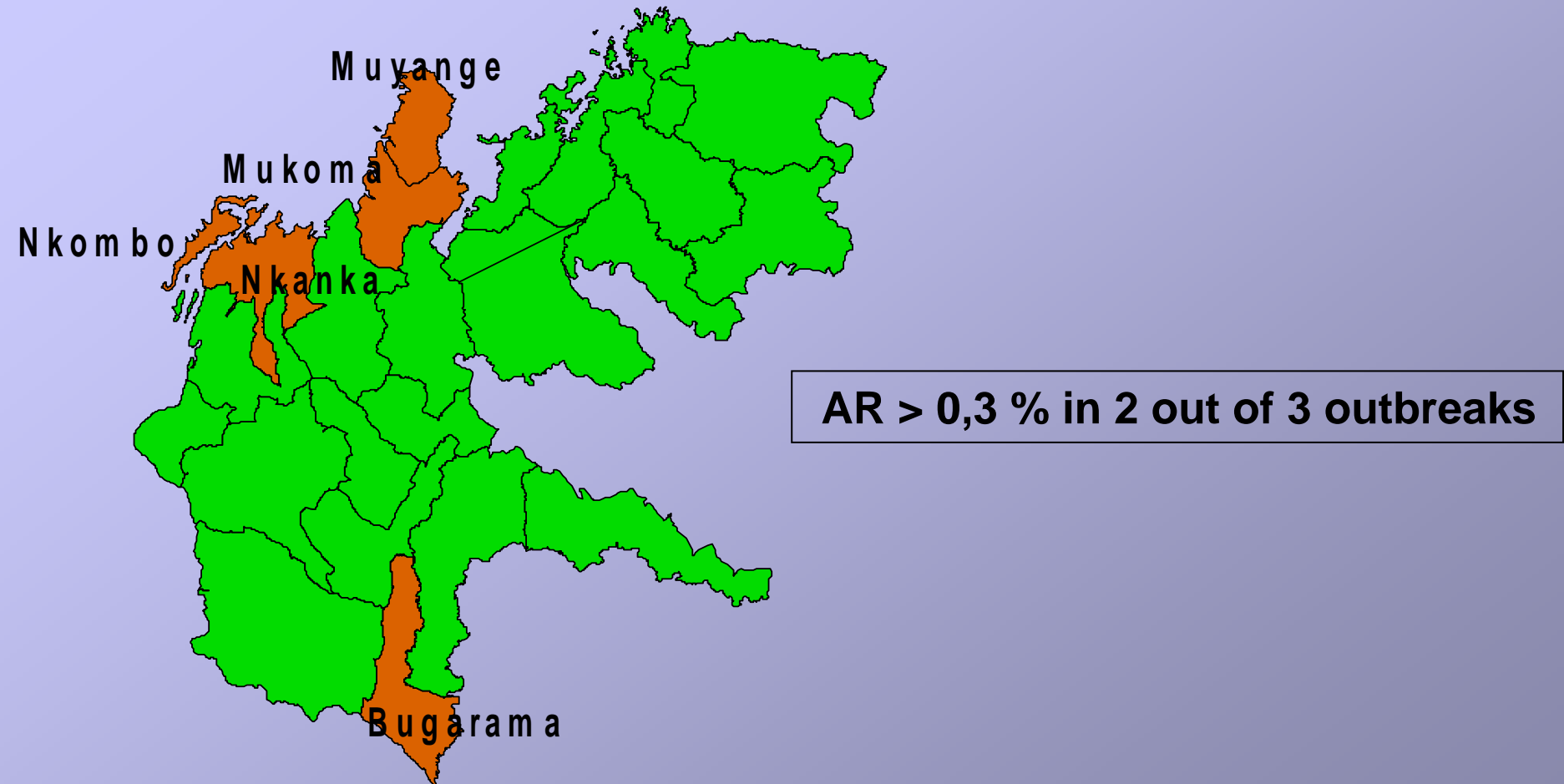
Health Centre Zones:

Population in catchments
area of each of 24 Health
centres



Cholera in Cyangugu (3 cont.)

TARGET IN SPACE: (ii) IDENTIFY TRANSMISSION "HOTSPOTS"



- 5 Health Centre Zones (HCZ) comply => target population of 140.000 persons
- In 5 HCZ of 140.000 people occurs 63 % of all cases in Cyangugu (610.000)
- In 5 HCZ of 140.000 occurs 50 % of all cases in Rwanda (8.000.000)

Risk factors (1)

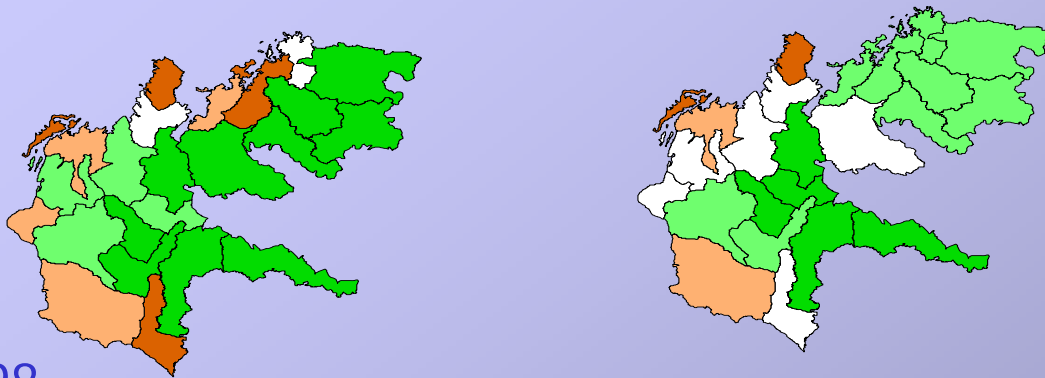
CHOLERA ATTACK RATE – PROXIMITY TO THE LAKE:

- The relative risk for cholera in the health centre zones adjacent to the lake was 11, 48 and 1,4 times higher (*in 1998, 2000, 2002*) than in non-adjacent zones, highly significant at 95 % confidence level ($p < 0,001$)

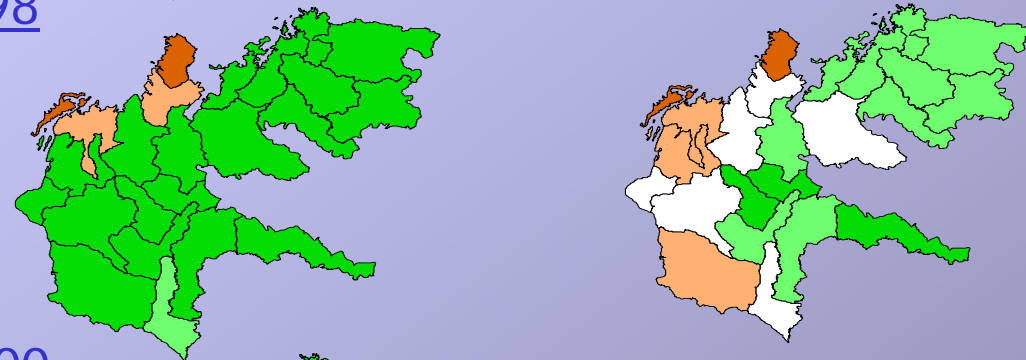


Risk factors (2) ...

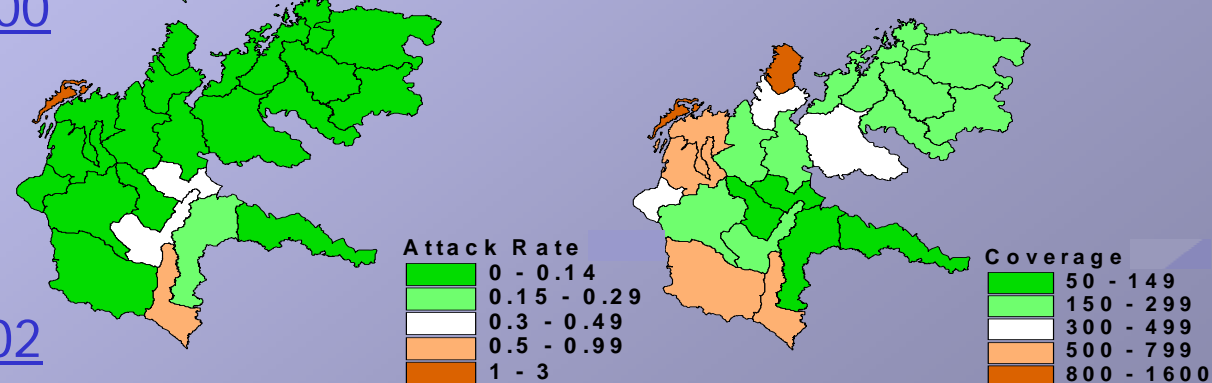
CHOLERA ATTACK RATE – COVERAGE WATER POINTS:



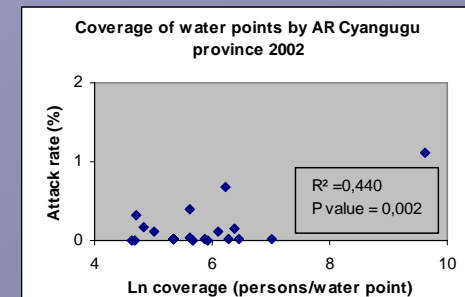
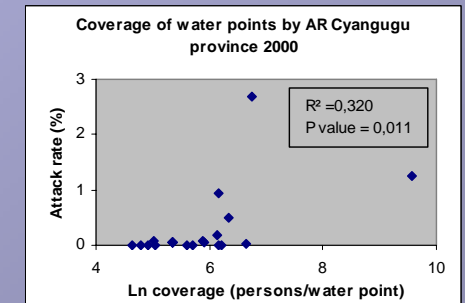
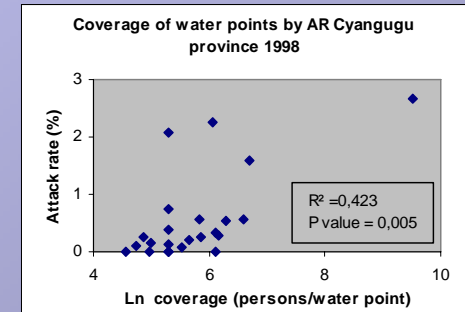
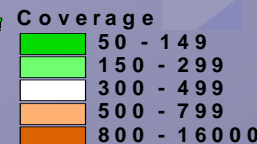
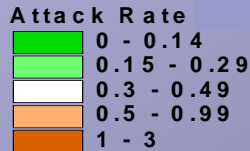
1998



2000



2002



“Epidemiological”
“Antropological”
“Technical”
study



DEFINITION OF THE PROJECT

To reduce the incidence of cholera in the target area by reducing the risk factors for primary and secondary cholera transmission

TARGET AREA

4 –not 5- Health Centre Zones out of 24 in Cyangugu Province

TARGET POPULATION

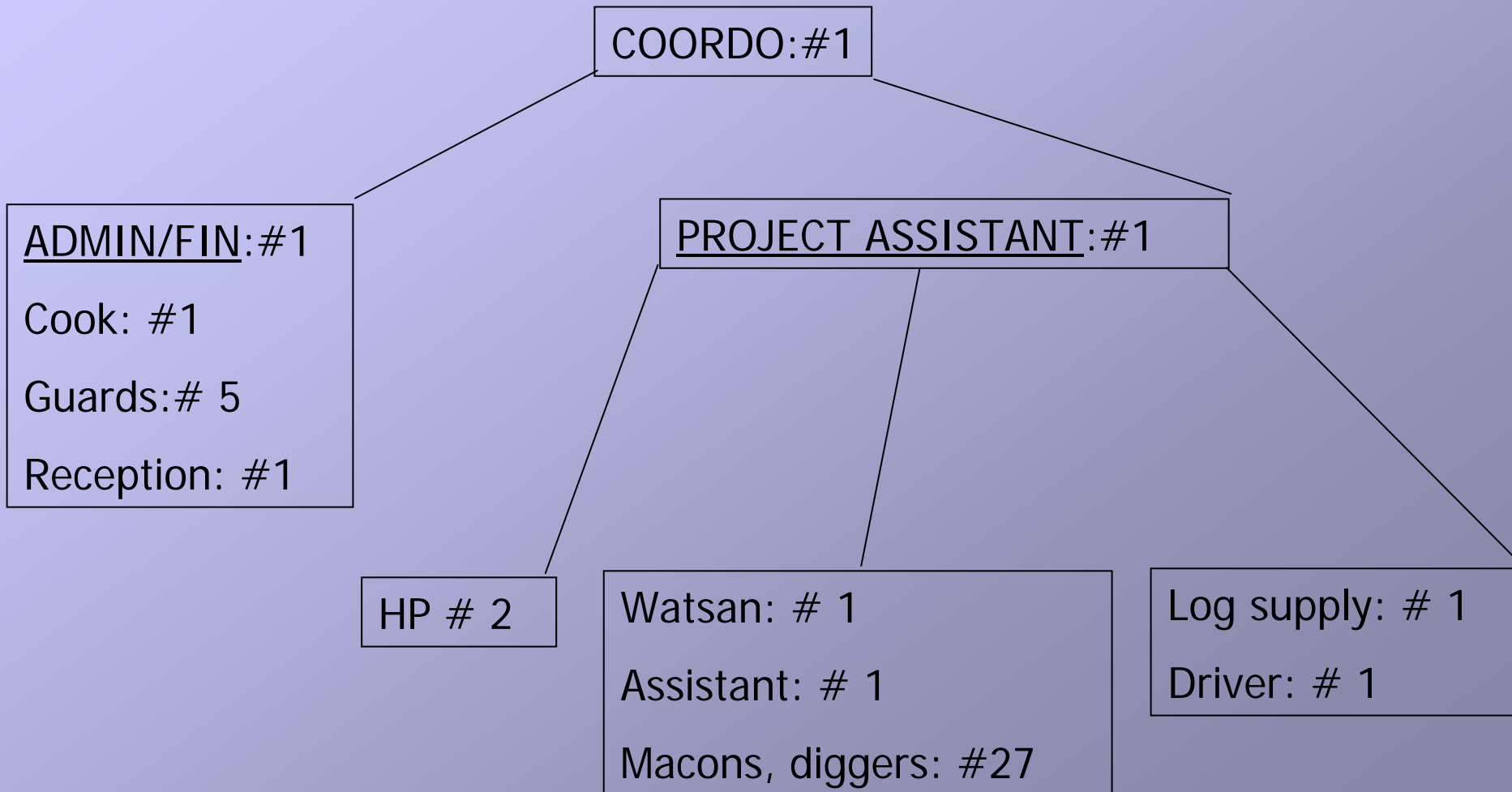
140.000

TIMEFRAME

June 2002 – June 2006 (4 effective – 5 financial years)

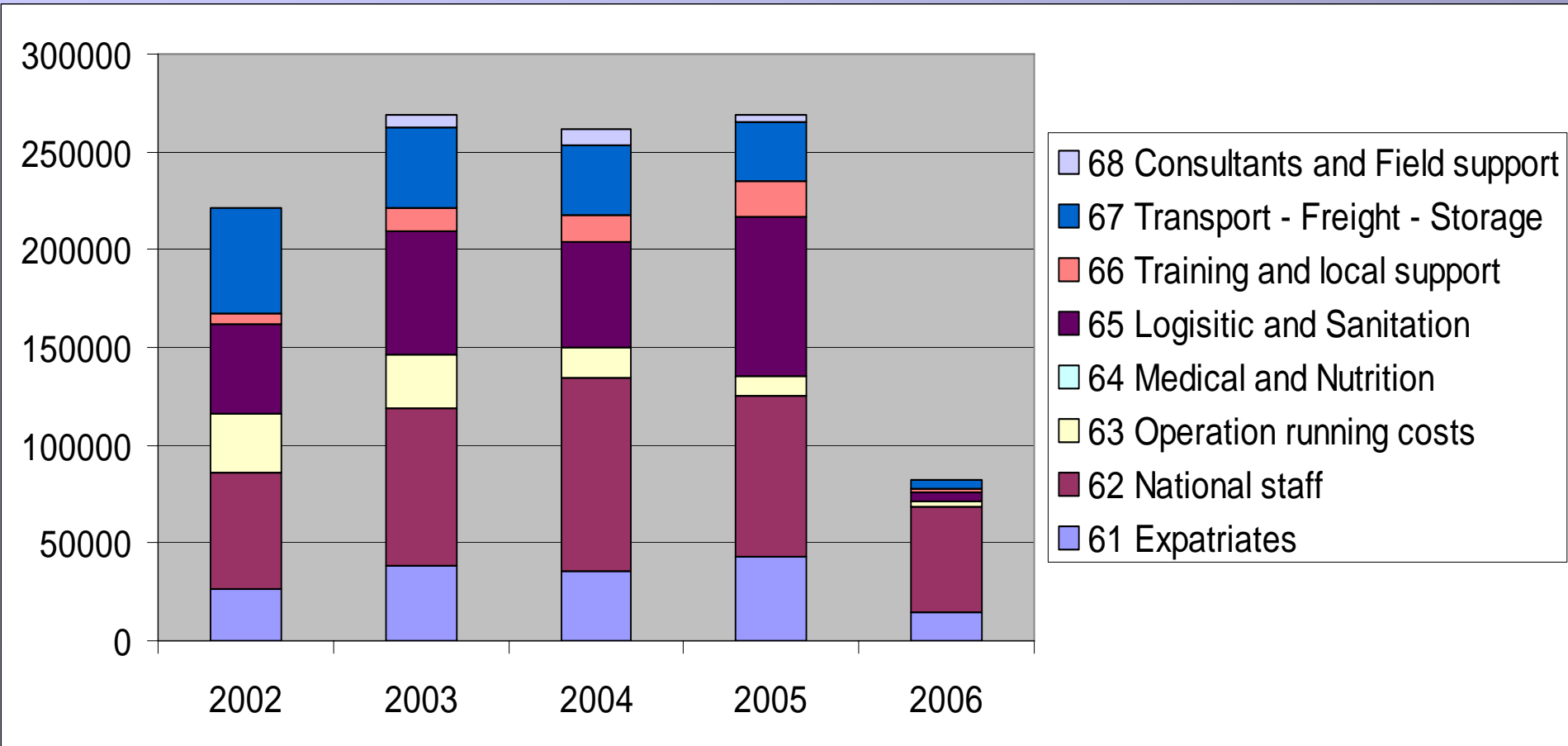
Means (1)

HUMAN RESSOURCES (43 + outsourcing)



Means (2):

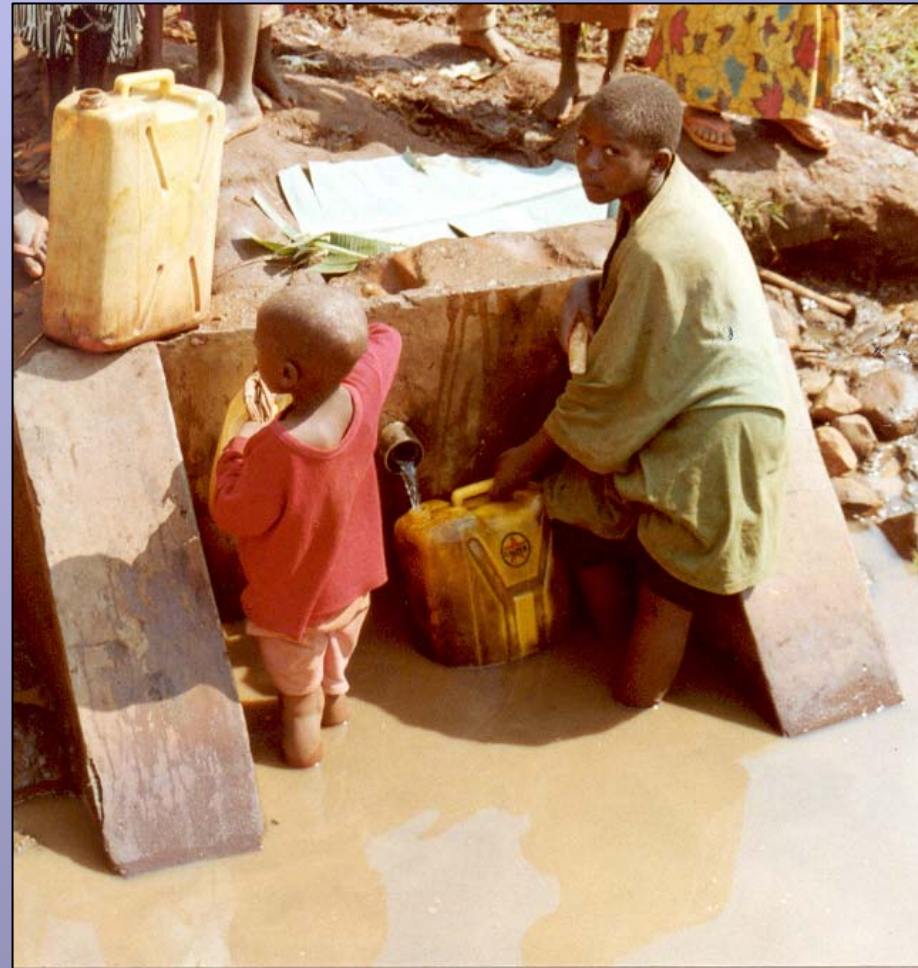
Finance: 1.100.000 EURO



Activities (1)

IMPROVE AVAILABILITY OF POTABLE WATER FOR POPULATION

- **Islands:**
Construction of 35 hand dug wells with Afridev handpumps (health centre and population)
- **Peninsular / mainland:**
Rehabilitation of 21 protected springs, 3 wells & rehabilitation gravity network
- **Promote** safe water consumption: counting of users and testing at all water points



Activities (2)

IMPROVE WATER COLLECTION, TRANSPORT AND STORAGE PRACTICES



- **Distribution** of 20.000 water containers
- **Hygiene Promotion** focus on cleanliness of water containers
- Promoted **household water treatment** especially in March and June

Activities (3)

IMPROVE HYGIENE BOTH BODY AND ENVIRONMENT

POPULATION

- 417 promotion and mobilisation sessions organized for 20.000 people
- transmission of 3 different radio spots for cholera prevention during 9 weeks broadcasted 609 times on Radio Communautaire de Cyangugu
- Creation and transmission of 2 radio chat programmes of 30 minutes each on the prevention of cholera

SCHOOL and Health structure:

- Training of 351 teachers in 26 primary and 1 secondary schools
- Creation and distribution of Hygiene booklet and toolkits in schools
- Cholera poem “Concours” organised in 26 schools
- Training of health promoters and health Centre staff

Drink safe water - Wash your hands - Use a latrine

Activities (4)

FURTHER APPROPRIATION OF LATRINES BY THE COMMUNITIES

- **Hygiene Promotion** focus on cleanliness of latrines and safe disposal of children's stools
- **Construction** of 20 blocks of 4 latrines each in 10 schools



Activities (5)

HAVE A REAL COLLABORATION WITH THE STAKEHOLDERS IN THE DESIGN, IMPLEMENTATION AND MANAGEMENT OF THE PROJECT

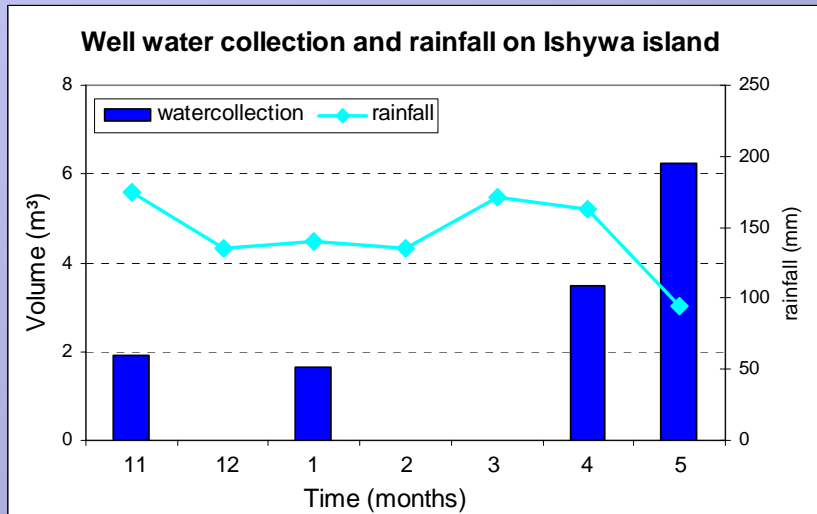
- **Training of 56** water users groups with elected hygiene, technical and financial responsible per well and free of Umuganda
- Formalised operational partnerships on all administrative levels:
 - Kigali (MINITERE)
 - Cyangugu (Directors)
 - Districts (Mayors)
 - Cells



Monitoring (1)

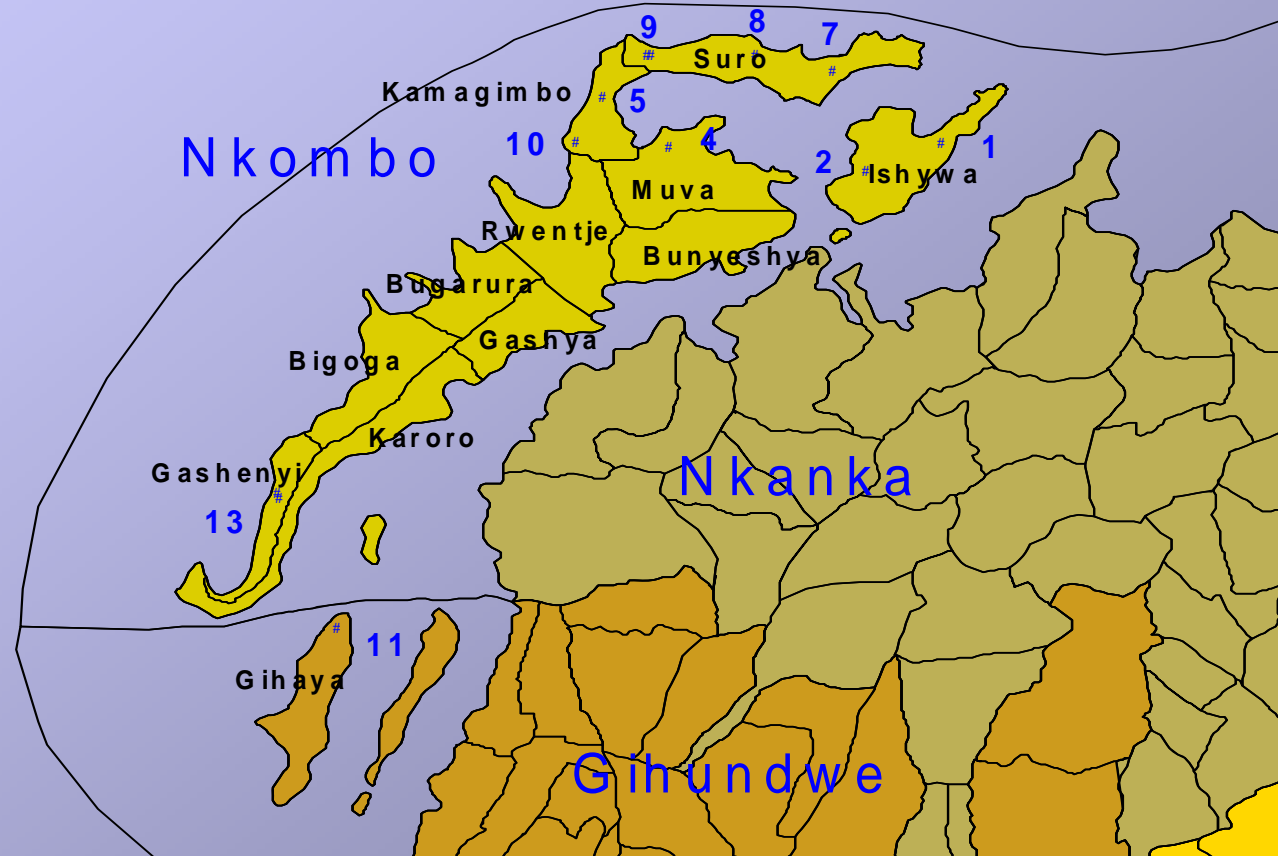
EVALUATION USE OF SAFE WATER POINTS:

- 8,3 [95 % CI: 7,9 – 8,6] litre water collected / person – day
- Rain water collection for domestic purposes
- Children are 63 % of water collectors => adapt size of jerry cans
- Only 14 % collect water properly.



Monitoring (2)

WATER QUALITY SURVEY:



- 10 families around 10 wells
- Verify faecal-oral contamination of the waterchain (well => cup)
- Indicator: Number of Thermo-Tolerant Coliforms (TTC) per 100 ml of water

Monitoring (2 cont.)

POST DELIVERY CONTAMINATION SURVEY:

Water chain	TTC-mean (geometric)	Risk with TTC > 10 per 100 ml (%)
Well	0 [95 % CI: 0 - 0]	0
Pump	2 [2 - 3]	17
Jerry can	5 [4 -7]	34
Cup	6 [4 - 8]	43
Domestic stock	9 [5 - 16]	43

- Water quality compromised by progressive post delivery contamination
- Values for TTC/100 ml are lower than those reported in literature
- Risk for secondary transmission of *V. cholerae* during outbreak
- Promoted household water treatment especially in March and June

Lessons Learned

JULY 2007 EVALUATION

General

- Project did not cover Bugarama HCZ
- Poor medical data collection (incomplete as of 2004)

Improve availability of potable water for population

- Wells still in good condition – no clear numbering done

Improve water collection, transport and storage practices

- Jerry cans still in use

Improve hygiene both body and environment

- Include food handling/preparation in promotion messages
- Less emphasis on utilisation of latrines (78% households have a latrine)
- Important turn-over of teachers low coverage with small sessions
- Use mass communication approach sooner – more frequent

Further appropriation of latrines by the communities

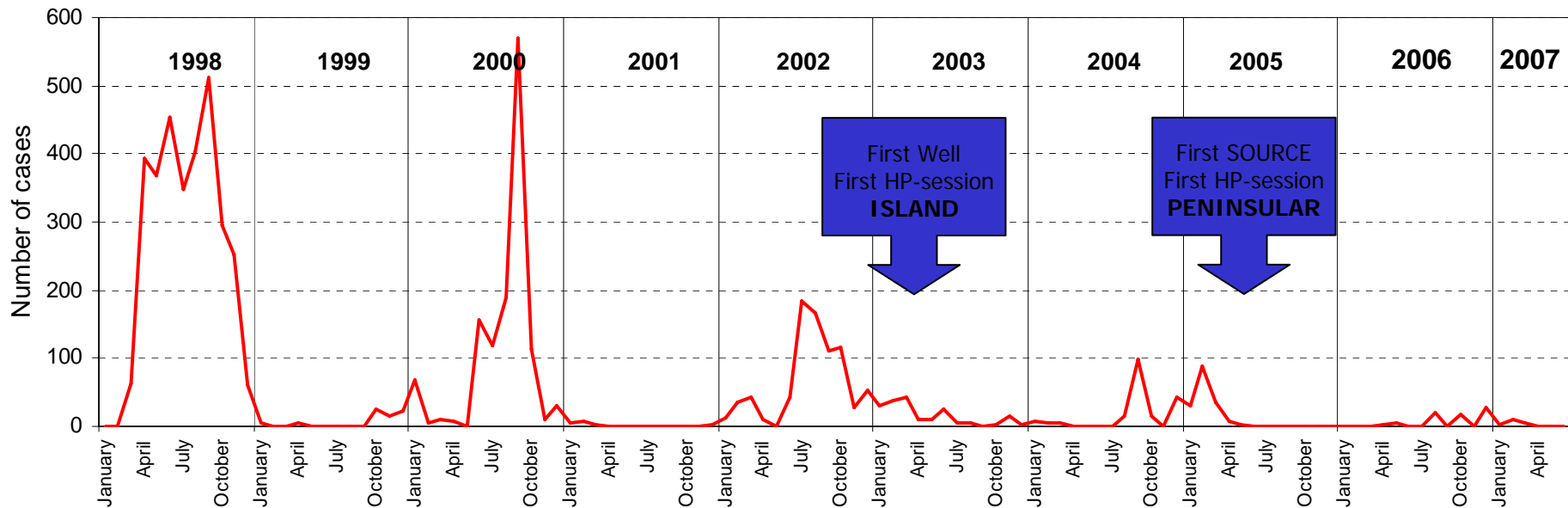
- Design issues, location issues

Collaboration with the stakeholders

- Pump maintenance/repair

Operational Conclusions

Monthly cholera cases in Cyangugu Province: 1998-2007



- So far no cholera outbreaks recorded when prevention project implemented
- Outbreaks recorded in neighbouring zones
 - e.g. Bukavu 2004/5
 - E.g. Bukavu 2006/7 (3508 cases, mortality 0,54 %)
- Targeted strategy enables operational implication in similar context's
- Ongoing evaluation to duplicate targeted strategy in RDC

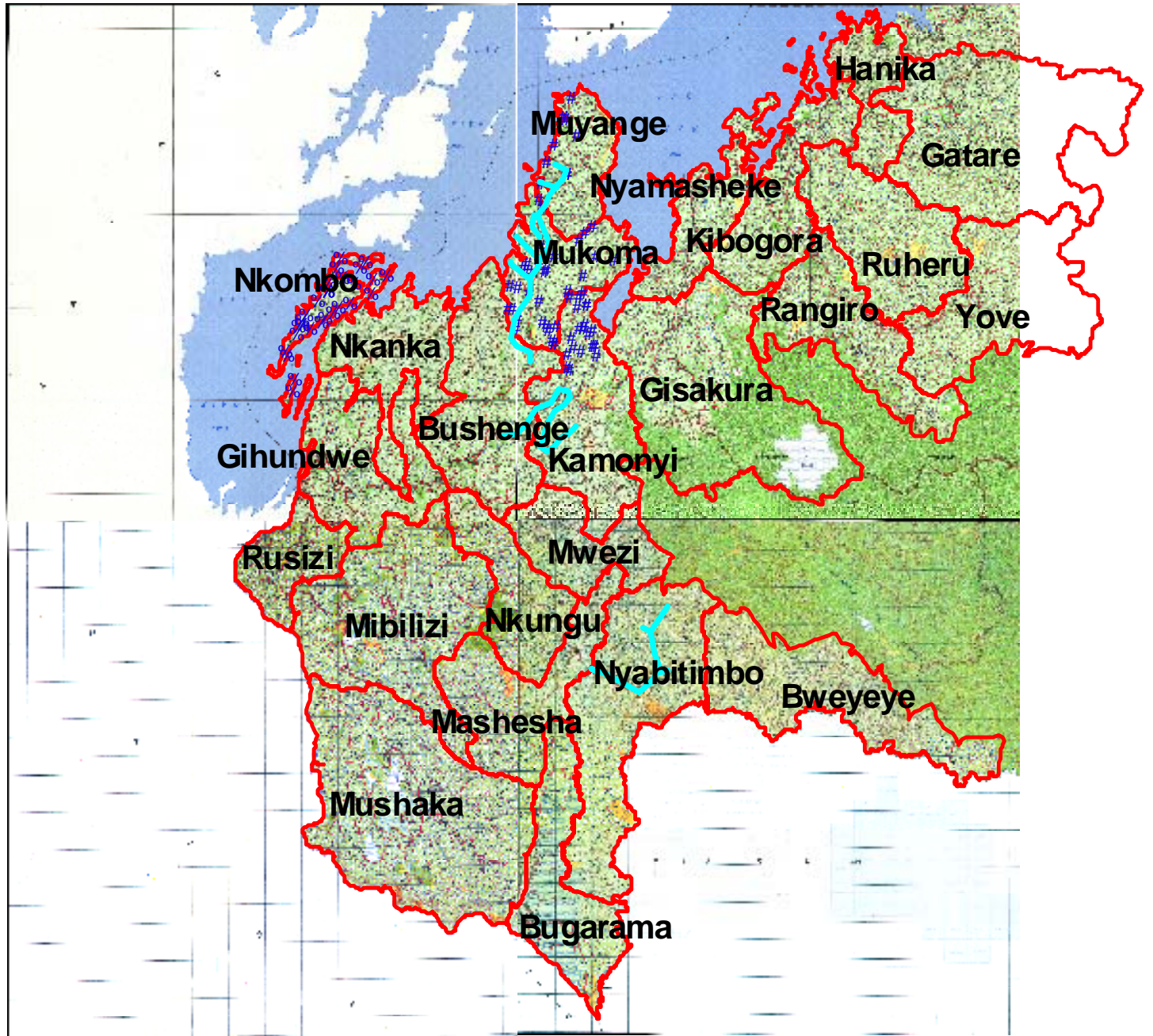
Acknowledgements

ALPHABETICAL ORDER

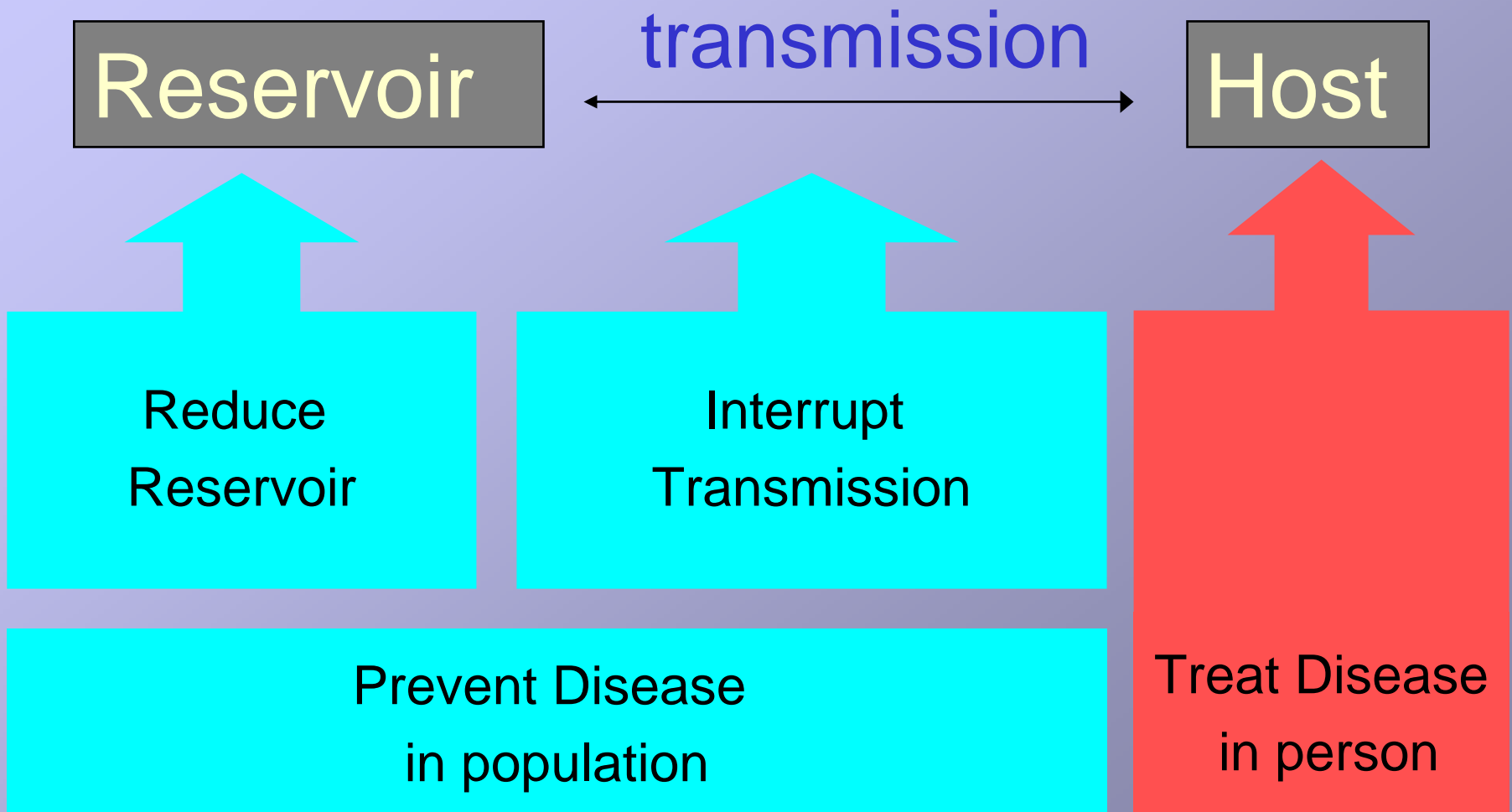
- Roger Teck ([Epidemio](#))
- Liz Walker, Peter Maes, Zoe Young ([Project support](#))
- Ana Berga, Raissa Azzalini ([Project Coord](#))
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- Humanitarian Non-Governmental Organisation
5 Operational Centres + 19 Partner Sections + 6 Branch Offices
- Providing medical assistance without discrimination to populations in need
- Present in 61 different countries
- Supported by 2022 international & 24,959 national staff
- Budget of 600 million euro in 2007
80 % from a private donor base
- Awarded the Nobel Peace Price in 1999



Control of Diseases Related to WHS



WHS Activities

Reduce Reservoir - Interrupt Transmission

- Water Supply
- Excreta Disposal
- Waste Water Management
- Waste Management
- Vector Control

"Infrastructural aspects"
Structures



"Human related aspects"
Culture, Attitudes, etc.



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