



# SMALL RESERVOIRS RESEARCH: FROM PHASE I TO PHASE II

A. Senzanje  
School Of Engineering  
University of Kwa-Zulu Natal  
Pietermaritzburg, RSA

# PHASE I AT A GLANCE...1

- **Challenge Programme on Water for Food (CPWF)**
  - R4D
- **Aim**
  - Increase water productivity for food and livelihoods
  - Alleviate poverty
- **Research approach**
  - Multi-institute, multi-disciplinary



# PHASE I AT A GLANCE...2

- **Timeline**
  - 2004 to 2008
- **Projects**
  - 68
- **Countries**
  - 45
- **Continents**
  - 3



# PHASE I AT A GLANCE...3

- **Basins**
  - Andes
  - Indo-Ganges
  - Karkheh
  - Limpopo
  - Mekong
  - Nile
  - Volta
  - Yellow

# SMALL RESERVOIRS - BACKGROUND

- **Small reservoirs**
  - Numerous (thousands) in all the basins
  - Central to rural water supplies and livelihoods
- **Advantages**
  - Inherently MUS (domestic, livestock, irrigation, etc)
  - ‘Common property’ for rural communities



# SMALL RESERVOIRS - BACKGROUND



# SMALL RESERVOIRS...2

- **Need for research?**

- Generally poorly planned, operating sub-optimally & falling into disrepair
- Benefits not fully documented
- Ownership and maintenance responsibilities not clear
- Hydrological linkage not fully appreciated
- Great potential to enhance benefits for little extra investment



# SMALL RESERVOIRS...3

- **Phase I research**
  - Better planning, operation and maintenance will result in sustained benefits
- **CPWF research project**
  - Small reservoirs project – PN46
- **Research hypotheses (questions)**
  - Purpose-built analytical tools and implementation procedures to optimise SR planning
  - Optimise usage of SR that are in place through use of scientific tools developed from research



# SR RESEARCH...1

- **Objectives**

- Basin level:

- support planning, development & implementation of SR ensembles

- Community level:

- MUS operation of SR



# SR RESEARCH...2

- **Research methodology – 5 stages**
  - I mobilisation
  - II basic research and understanding of SR
  - III development of tools @ basin level
  - IV development of tools @ community level
  - V information dissemination

# SR RESEARCH – Findings...1

- **Technical**
  - Planning and design inadequacies
  - Hydrological linkages and impacts



# SR RESEARCH – Findings...2

- **Management**

- No clear ownership and responsibility lines
- SR falling into disrepair:
  - silted up, dam walls damaged, etc
- Water quantity and quality problems

# SR RESEARCH – Findings...3

- **Usage**

- Significant MUS aspect

- Domestic, livestock, irrigation, fishing, brick making

- Water productivity studies

- Irrigation, livestock, etc



# SR RESEARCH – OUTPUTS

- **Web-based small reservoirs toolkit**
  - [www.smallreservoirs.org/](http://www.smallreservoirs.org/)
  - Includes most aspects that were in the original research proposal
  - Has had some ‘hits’ for real (next slide!!)

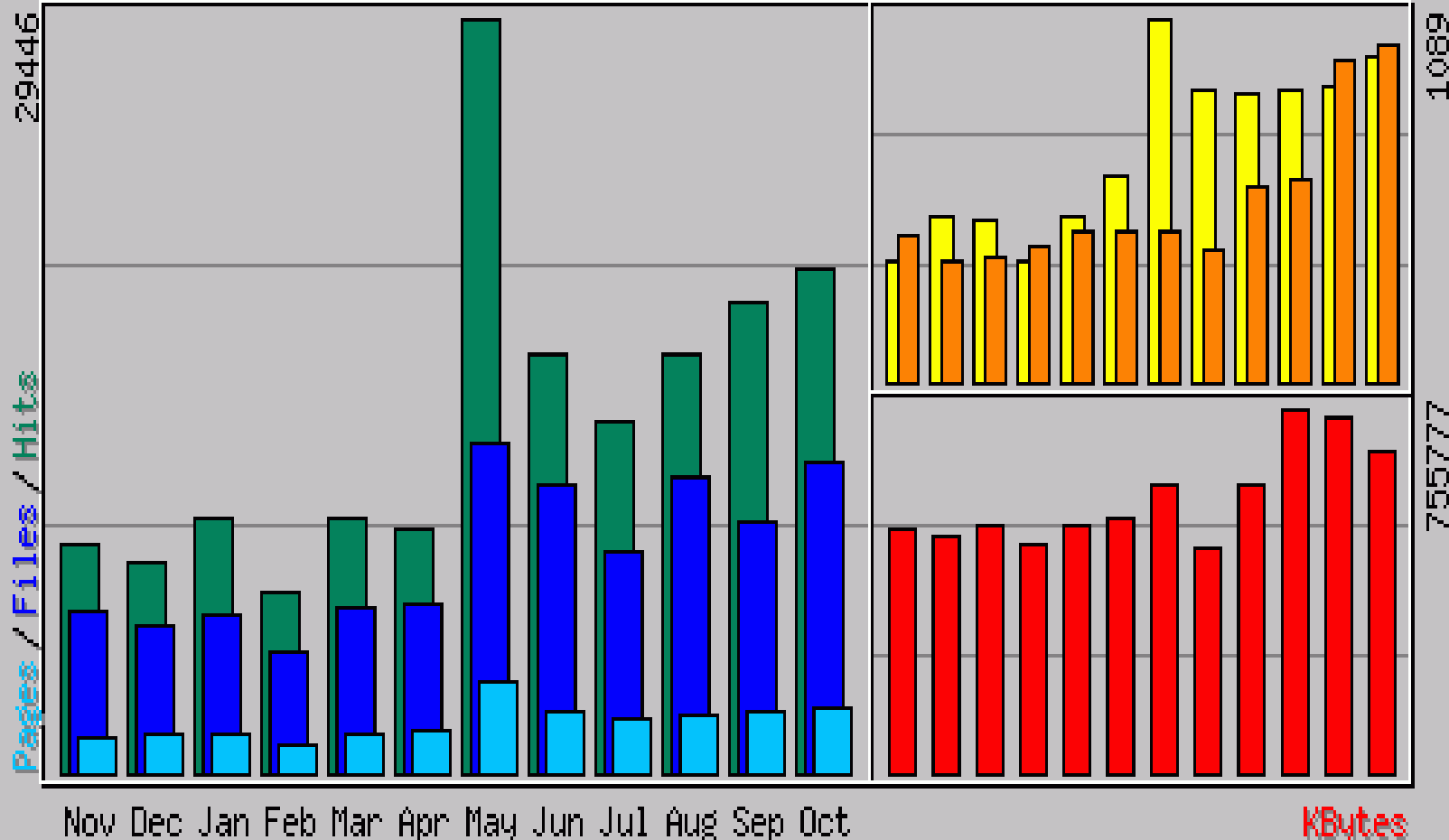


# PHASE I AT A GLANCE...2

Usage summary for smallreservoirs.org

Visits / Sites

Pages / Files / Hits



# SR RESEARCH – OUTPUTS...2

- **Publications**

- Students' theses, journal articles, conference papers, reports, briefs, etc

- **Capacity building**

- UG student
- MSc students
- PhD students
- Staff on the ground, e.g., extension workers, etc





# SR RESEARCH – IMPACT

- **Participatory Impact Pathways Analysis (PIPA)**
  - Aim to maximise impact of research
- **Problem(?)**
  - Introduced a bit late in the Phase I projects



# PHASE I TO PHASE II...1

- **Basin Focal Project**

- Summary of all CPWF Phase I research
- Good science, but now want to go onto the ground for impact
- Need to maximise impact by planning for it right from the beginning



# PHASE 1 TO PHASE II...2

- **Emerging issues**

- Water and poverty in the Limpopo Basin
  - Inextricably linked!
- SR as small-scale water infrastructure critical to rural livelihoods
  - Food security and livelihoods improvement
  - Offers opportunity to mitigate droughts in semi-arid areas
- Operation and management (governance) issues
  - Big problems indeed
  - Need robust management models
- SR not in isolation but one of the (many) alternatives, e.g., boreholes, open wells, sand dams, etc



# PHASE 1 TO PHASE II...3

- **LBDC**

- SR fit in very well into the LBDC main objective...
  - Management of rainwater...
  - Improve smallholder productivity...
  - Improve livelihoods
  - Reduce risk...



# INTO THE FUTURE

- **CPWF TO CRP5**

- CPWF abandoned for CRP5(?)
- Who will collate and disseminate results(?)



# SMALL RESERVOIRS FOREVER



THANK YOU!!

***THANK YOU!!***