

**iwrm**  
water for development & growth

**Water**  
and the environment



# **Water and the Environment – Wilna Kloppers**

Department: Water Affairs & Forestry

## **IWRM Projects**

1. Groundwater & Climate Change – Swartruggens
2. Olifants River Wetland Awareness – Ebenhaeser
3. Clearing Alien Invasive Plants – Ebenhaeser
4. River Health & Awareness – Agter-Witzenberg
5. Waste Recycling – Koue Bokkeveld
6. River Cleanup – Op-die-Berg Koue Bokkeveld
7. Water resources capacity building - WWF



## **Water and the Environment**

Wilna Kloppers

Department: Water Affairs & Forestry

# **Strengthening our understanding of water resources**

**Shaun Johnston**  
**World Wildlife Fund for Nature**  
**(WWF-SA)**



# Groundwater & Climate Change Monitoring

## Swartruggens Conservancy

### Background

- Conservancy consists of 23 landowners covering an area of more than 100 000 ha of rugged mountainous terrain between the Koue Bokkeveld & the Ceres-Karoo
- Area receives low rainfall of between 100 – 300 mm/a
- Agriculture, tourism and farm workers rely heavily on groundwater.



A large, layered rock formation, likely sandstone, dominates the left side of the image. The rock shows distinct horizontal strata and is weathered with some cracks. The background features a clear blue sky and a desert landscape with sparse, low-lying vegetation and other rocky outcrops. The overall scene is brightly lit, suggesting a sunny day.

As custodians of the Swartruggen's unique biodiversity and environment, and through responsible management and shared interests, we can create a legacy for future generations.

## Project Objectives

- Identify important springs & boreholes
- Train 4 people to build spring protection
- Rehabilitate leaking artesian borehole
- Protect 10 springs
- Monitor groundwater monthly
- Establish a network of 6 weather stations
- Monitor climate continuously
- Process groundwater & climate data





**Inhabitants rely on springs & boreholes to supply needs**



**Repair of leaking artesian borehole**



**Typical unprotected spring used to supply domestic water**



**Protected spring & collection basin**



## Long Term Goals

- Protect groundwater resources.
- Measure effects of climate change locally.
- Ensure economic sustainability of agriculture & tourism





## Questions



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Olifantsriver Wetland Awareness

Olifantsriver Wetland Awareness

*Ebenhaeser*

"A sleeping eco-tourism potential"

21.09.2007 09:22

# Introduction



- The wetland is found on the Southern Banks of the Olifantsriver, approximately 15 km upstream from the river estuary and the Atlantic Ocean –and next to the Olifants River.
- The wetland ecosystem consist of approximately 3-4 ha.
- Water quality and quantity play an important role in the survival of wetland ecosystem.





## Introduction (cont...) Background

- Wetland originate from the floods of the 1925's.
- 10-15(30 ha) Pieces of land are been influenced by the wetland ecosystem.
- Lead to conflict between small scale farmers and environment.



A photograph of a yellow flower with a dark center and green, lobed leaves growing from sandy soil. The flower is the central focus, surrounded by several green leaves with serrated edges. The background is a light brown, sandy surface with some small twigs and debris.

**Vision:**

**To develop the Olifants River -  
Ebenhaeser wetland ecosystem as an  
eco-tourism- and environmentally  
education unit.**

09.08.2007 09:22

# Mission

**Promote the responsibility, tolerance and mutual-understanding, through the facilitating and implementation of a wetland ecosystem conservation area.**

09.08.2007 09:24

## Objectives (General)



- To develop a set of interventions through stakeholder involvement.
- Set-up a comprehensive wetland monitoring team.
- Raise community awareness and promote education, training and long-term development through proactive initiatives and entrepreneurship.
- Establish a environmental club.







## Objectives (specific)

- Sustainable utilization of natural and cultural resources in an integrated, equitable and collaborative manner.
- Protect and preserve the wetland and other natural resources in and around Ebenhaeser
- Job creation (5-6 unemp. youth), skills development.
- Promote eco-tourism and entrepreneurial opportunities.





## Short-term goals

- Establish the status of the wetland.
- Surveying the wetland ecosystem.
- Identify potential and suitable funders.
- Conduct a feasibility study.





## Long-term goals

- Protect and preserve the wetland and other natural resources in and around Ebenhaeser.
- Develop a set of environmental awareness material focusing on the diversity.
- Develop a bird-and hiking trail and link to the West Coast Hiking trail.
- Establish an eco-school/enviro-school.
- Create permanent jobs.



# Challenges



- Institutional arrangements.
- Community dynamics.
- Lack of understanding from small scale farmers.
- Leadership.



# Conclusion:

- The success of the project needs to ensure that the community, small scale farmers and “the so called” community leaders became involve with wetland conservation.
- The project needs to identify the need for an fully fledge wetland development unit.





## Questions



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# Clearing alien invasive plants

## Ebenhaeser Matzikama

### Background:

- Project in Matzikama IDP
- Ebenhaeser - 45km from Vredendal, 2500 inhabitants
- Land restitution case
- Tenure reform process
- Subsistence, small-scale farming & socio-economics
- Alien invasive plants – encroaching onto fertile agricultural land, community attempts



**Ebenhaeser Matzikama**



**Alien plants invading fertile soils & pushing out subsistence farmers**



**Alien invasive plants damaging canal infrastructure**



**Eradicate alien invasive plants & restore agricultural lands**





**Vision:** Job creation, eradication of poverty and the conservation of the environment for current & future generations

**Mission:**

- An integrated community initiative to clear alien invasive plants in Ebenhaeser, thereby serving as a vehicle to create job opportunities and alleviate poverty.



## **Project Objectives**

- Determine the nature & extent of alien invasive plants in and around Ebenhaeser.
- Determine their effects on the environment, water resources and infrastructure.
- Clear alien invasive plants in pre-selected areas.
- Create 12 temporary and 10 secondary job opportunities over a 12 month period.
- Integration with the Ebenhaeser water awareness and wetlands project



## **Long Term Objective**

To permanently clear alien vegetation from Ebenhaeser in order to preserve the environment, protect water, soil resources and infrastructure, while building capacity amongst residents.

## **Conclusion**

Alien vegetation is destroying the environment and consuming water – this is the first step to eradicate this pest while creating jobs – we look forward to your assistance in our fight.



**Alien plants invading fertile soils & pushing out subsistence farmers**



**Questions**



## Olifants River Health & Awareness

### Agter-Witzenberg

IWRM I micro-project initiated as part of a capacity building programme investigated water quality at the source of the Olifants River, while creating water quality.

**Vision:** Create awareness of the importance of water at the source of the Olifants and Breede rivers, in terms of quality and quantity for themselves and water users downstream.



## Mission:

- To train farm workers to **identify and repair** leaking pipes, taps and toilet cisterns in order to save water.
- To create water quality and conservation **awareness** at local primary schools.
- Monitor water quality to prevent pollution.



## Extensive farming & damming in the Witzenberg



Typical leaking pipe



Poor maintenance



Grade 9 learners will create awareness & test water quality

## Project Objectives

- Awareness in three schools (650 learners)
- Awareness & leak repairs at 255 farm worker houses.
- Test water quality of the Olifants-River.





## Long Term Goals

- Water awareness creation and conservation.
- Ensuring good water quality in the Upper Olifants River and protection of the environment.

## Conclusion

There is great potential for development in the Witzenberg Valley, especially tourism, but we need to preserve our environment.





**Sewerage treatment  
plant overflowing  
into a tributary to the  
Olifants River**



## Questions



# Fransies Waste Recycling

## Koue Bokeveld Witzenberg

**Vision:** To create a cleaner environment while ensuring an improved quality of life for the inhabitants of Op-die-Berg.

**Mission:** Collect, sort and recycle waste from the town of Op-die-Berg.



## Background:

- Op-die-Berg, 45km north of Ceres, is a small rural community consisting of +/- 250 households.
- Most of the town's inhabitants are seasonal farm workers as a result unemployment, poverty and illness is commonplace.
- Domestic waste is currently buried in a landfill site far from the town.





**Refuse collection  
day Op-die-Berg**

## Project objectives

- **Job creation** for the 13 local unemployed, women (60%) & disabled persons.
- **Income generated** through sale of recycled matter.
- Eradicate **poverty & hunger**
- **Awareness programme** at local schools.
- Cleaner town & **environment**.





**Landfill site located kilometres from the town where domestic waste is currently buried.**

## Long Term Goals

- Sustainable employment
- Eradication of poverty
- Improved safety and health of the community
- Prevent water pollution through removal of wastes
- Extend the life of the municipal landfill site
- A catalyst for other projects - second phase recycle waste generated from farms
- Third phase – vegetable farming





**Important wetland downstream of  
the landfill site at risk**



## **Conclusion:**

We are positive that our project will make a difference in our community.





## Questions



# River Cleanup & Bridge Repair

## Op-die-Berg Koue Bokkeveld

### Background

- Rivers separate communities of Op-die-Berg
- Access routes to the shops & schools cross rivers
- Cleanup of rivers
- Repair & safety of two bridges
- Create employment, empowerment & poverty relief



**Droog-voet Bridge**



**School bridge**



**Illegal dumping**



**Polluted water**



## **Vision:**

Creation of a safe and hygienic environment through awareness & conservation of water resources.

## **Mission:**

- Improved water quality - environment & rivers
- Sustained environmental awareness.
- Improved living standards.
- Personal growth & development





## Project Objectives

- Cleaning of environment & rivers
- Repair of two bridges & pathway
- Temporary employment





## How

- Integration with other stakeholders
- Project duration 6 months – after which environmental ethic will be entrenched
- Effective financial management & planning
- Continual communication
- Capacity building through training



## Long Term Goals

- Encourage caring for nature.
- Training & awareness of inhabitants
- Facilitation of life skills
- Improvement in living standards
- Towards greater responsibility wrt conservation & use of natural resources



## Conclusion:

A project by the community for the sake of the community to the advantage of the community Op-die-Berg.

To contribute to Millennium Development Goals (fight against poverty, empowerment of women & youth, combat diseases & environmental sustainability)





## Questions



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