

# AFRICA WORKS!

21ST CENTURY TRENDS



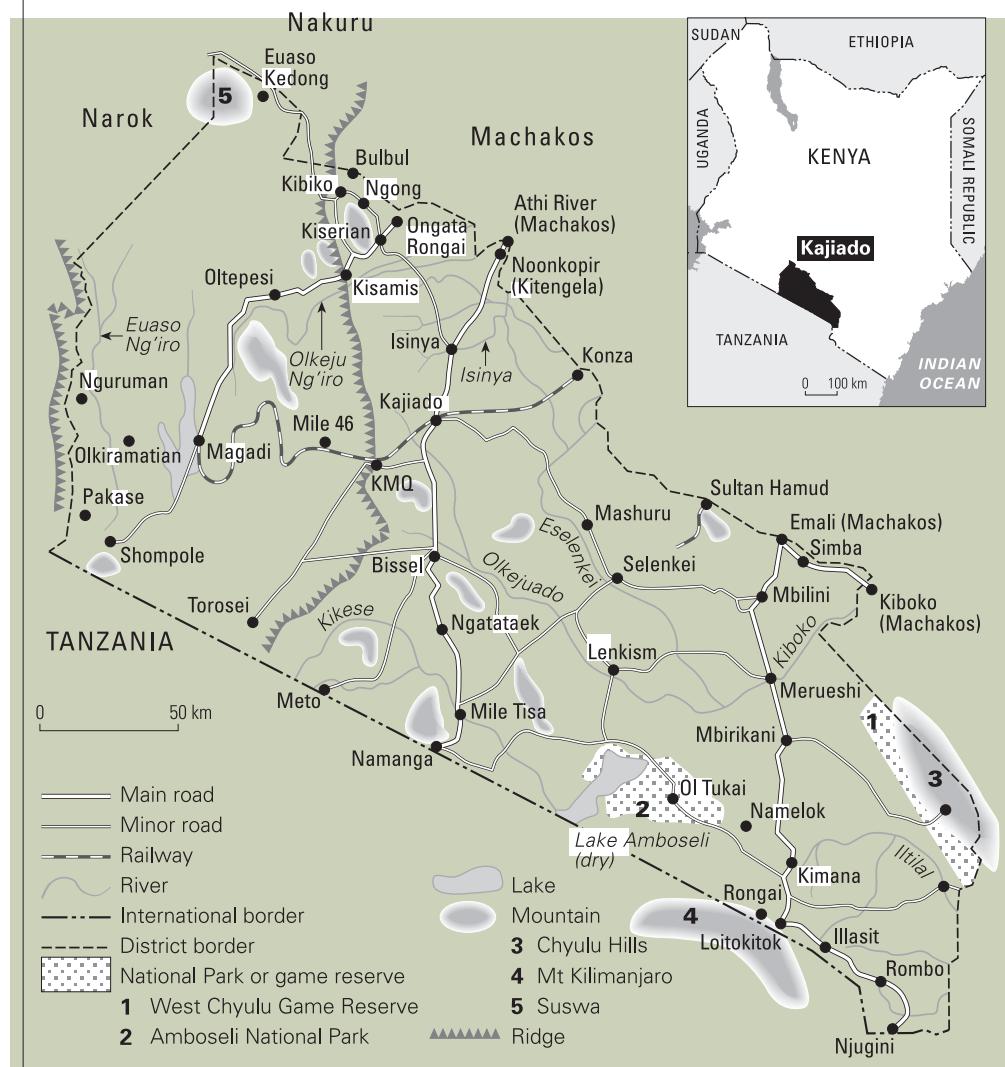
## GROUNDWATER THE SILENT TRAGEDY OF SEMI ARID AFRICA?

### EXPERIENCES FROM SOUTHERN KENYA

M. Rutten & M. Mwangi  
African Studies Centre &  
SEUCO Kenya

*30 October 2012*

# KAJIADO COUNTY: MAASAI NOMADIC PASTORALISTS



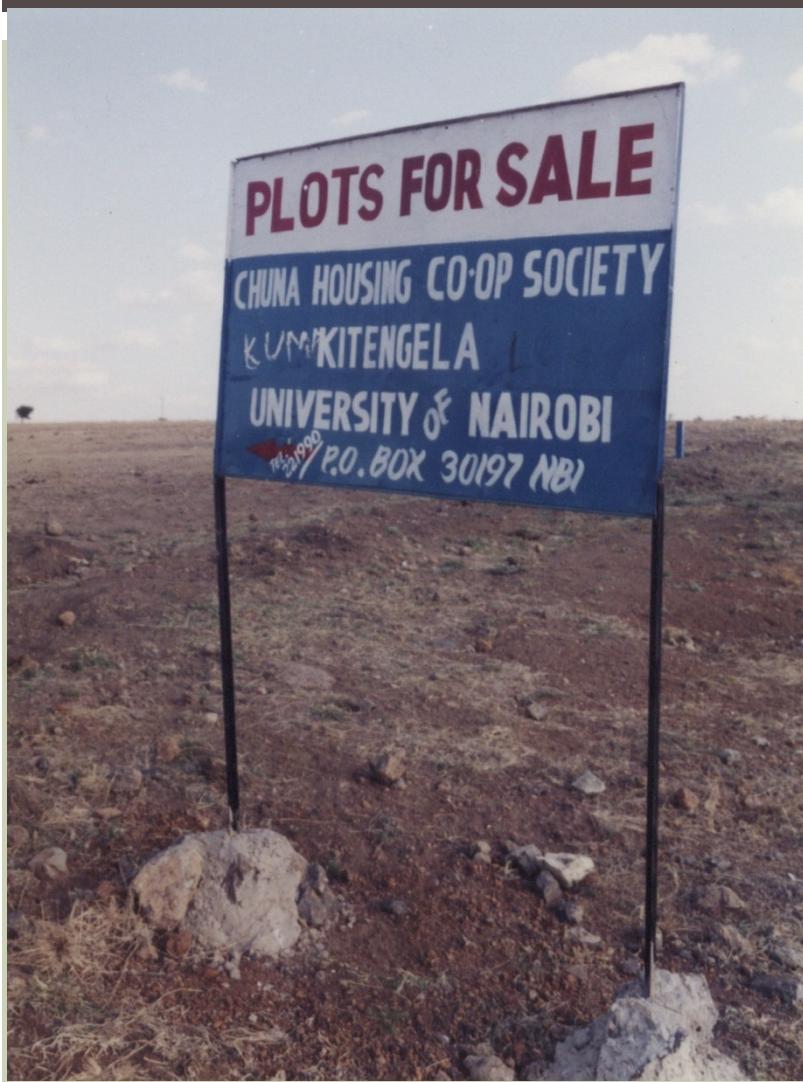
Until 1968: *closed district*

1967 WB Livestock Development Project

*Group ranches:*  
private land held by a group of families

**Objective** WB: change subsistence economy (milk) in market-oriented economy (fattening steers)

# WILLING SELLER, WILLING BUYER?



- 1980s subdivision of the group ranches: land a commodity to be sold and bought
- Buyers:
  - 1. small scale farmers
  - 2. political/business elite
  - 3. outside investors (export)



**Maa** (*Osina orok emirata enkop = selling of land will result in extreme poverty*)

**Kiswahili** (*Kuuza uridhi kununua umasikiri = selling your **natural inheritance** (=land) will make you poor*).

## 1988-2003 SHALLOW WATER IMPROVEMENTS

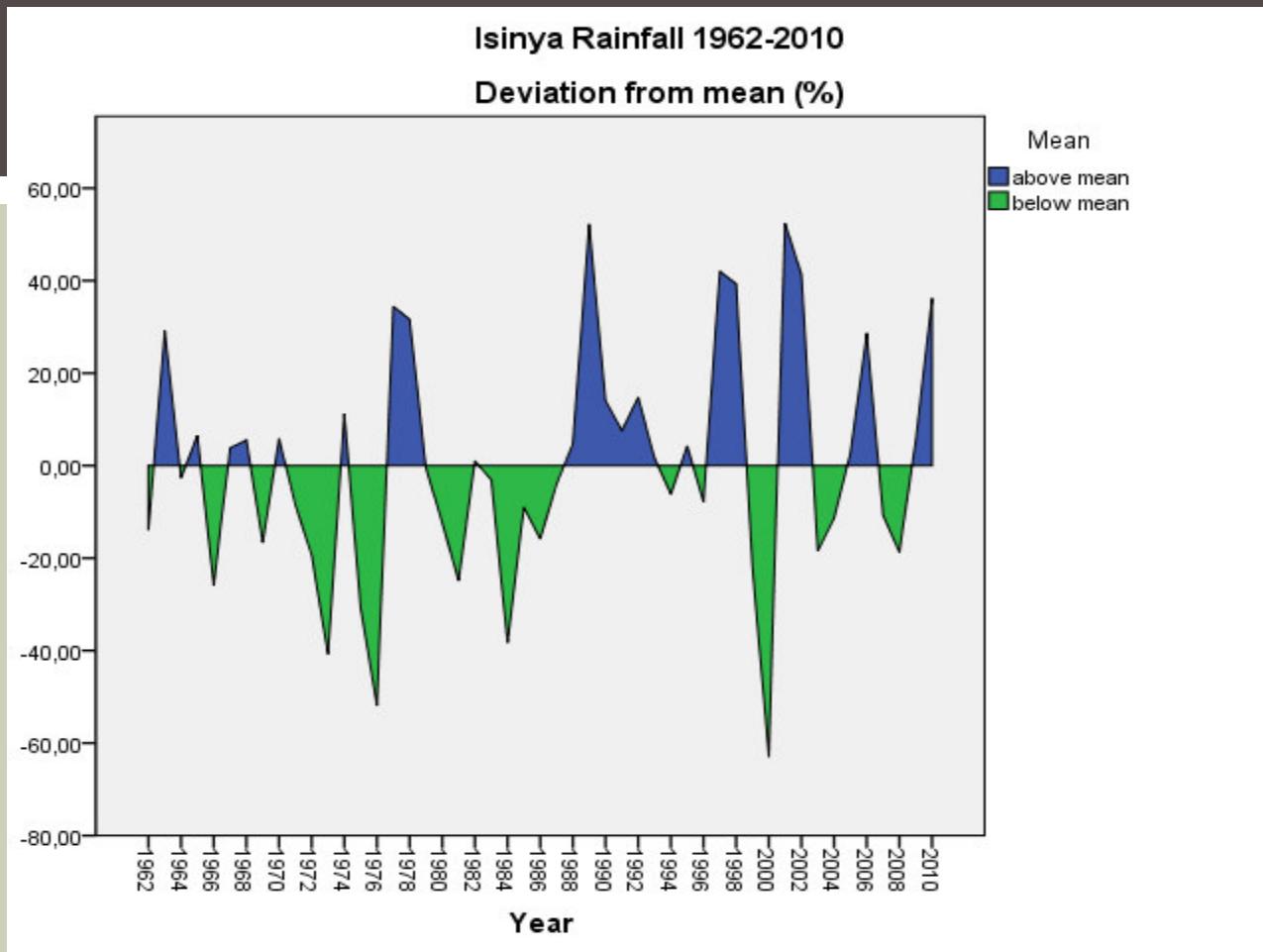


- 1987- 2003 Netherlands supported Integrated Rural Development Project (ASAL Kajiado). Most deep boreholes had broken down, but all shallow wells functioning.
- Shallow wells Improvement: a filter is placed and a hand pump or diesel engine will bring up water for livestock and human consumption. Increasingly water used for cultivation.
- Until recently the wells have proved to be **durable and reliable**.

# DRIED UP SHALLOW WELL (2005-



# ISINYA RAINFALL 1962- 2010



Out of the **10 wet years** in the 1962-2010 period, **6 occurred in the last 14 years**, with the number of rainfall days remaining constant (approximately 50 per year).

# CHICKEN AND FLOWER FARMS



- In addition to individual newcomers, a few industries have emerged in the area, notably chicken(feed), eucalyptus and flower farms.
- Employment on the flower farms is mainly by **non Maasai** immigrants from Western Kenya.
- Also a large number of private educational institutions have settled.

# ROSA ABACADABRA: BEST KENYAN ROSE



2004 Aalsmeer

## P.J. DAVE FLOWERS IN ISINYA, 55 KM SOUTH OF NAIROBI.

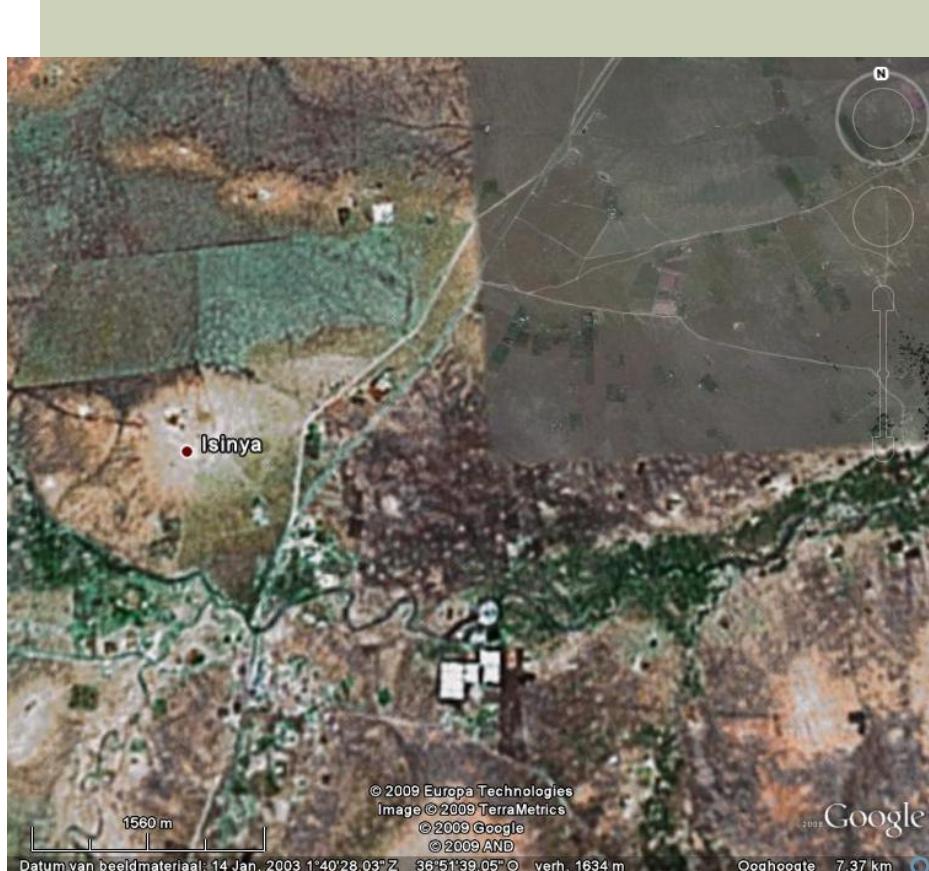
P.J. **Dave Flowers** is among the key flower growers in Kenya. The family owns three companies:

- P.J. Dave Flowers Ltd (35 hectares),
- Isinya Roses Ltd (29 hectares),
- P.J. Dave Flora Ltd (16 hectares)

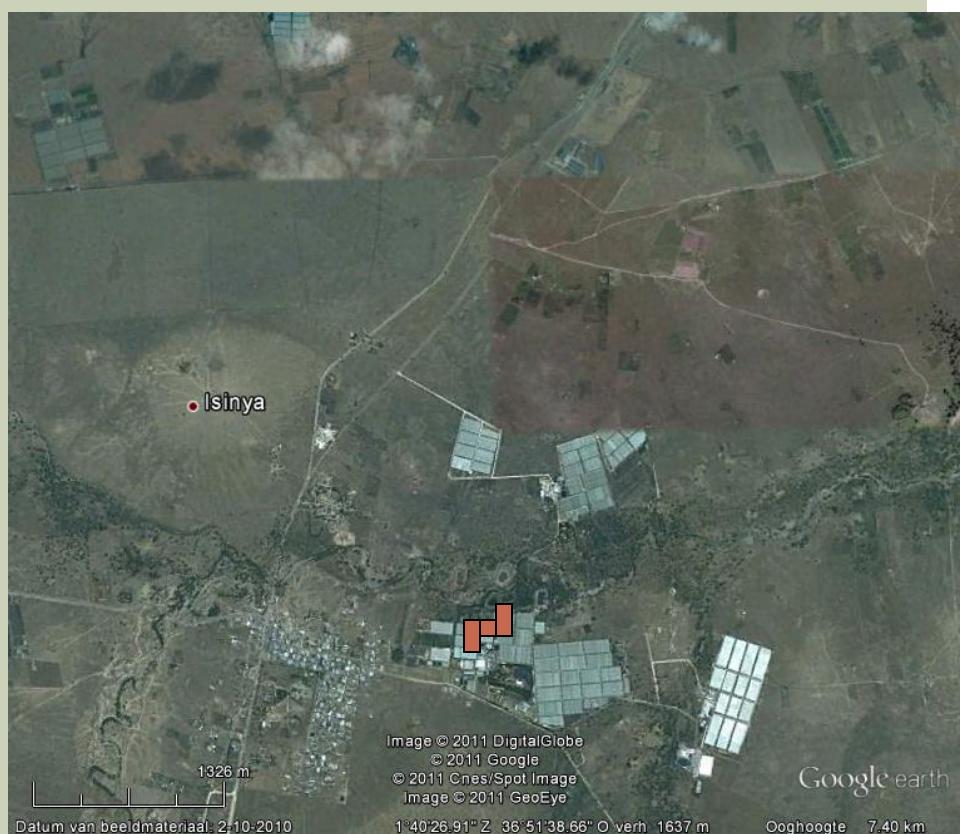
These farms are specialized in growing roses in green houses.

Since 2008 turmoil: diversified into miraa (khat) and livestock keeping and searching for other consumer markets (Asia).

# VISIBLE IN GOOGLE EARTH

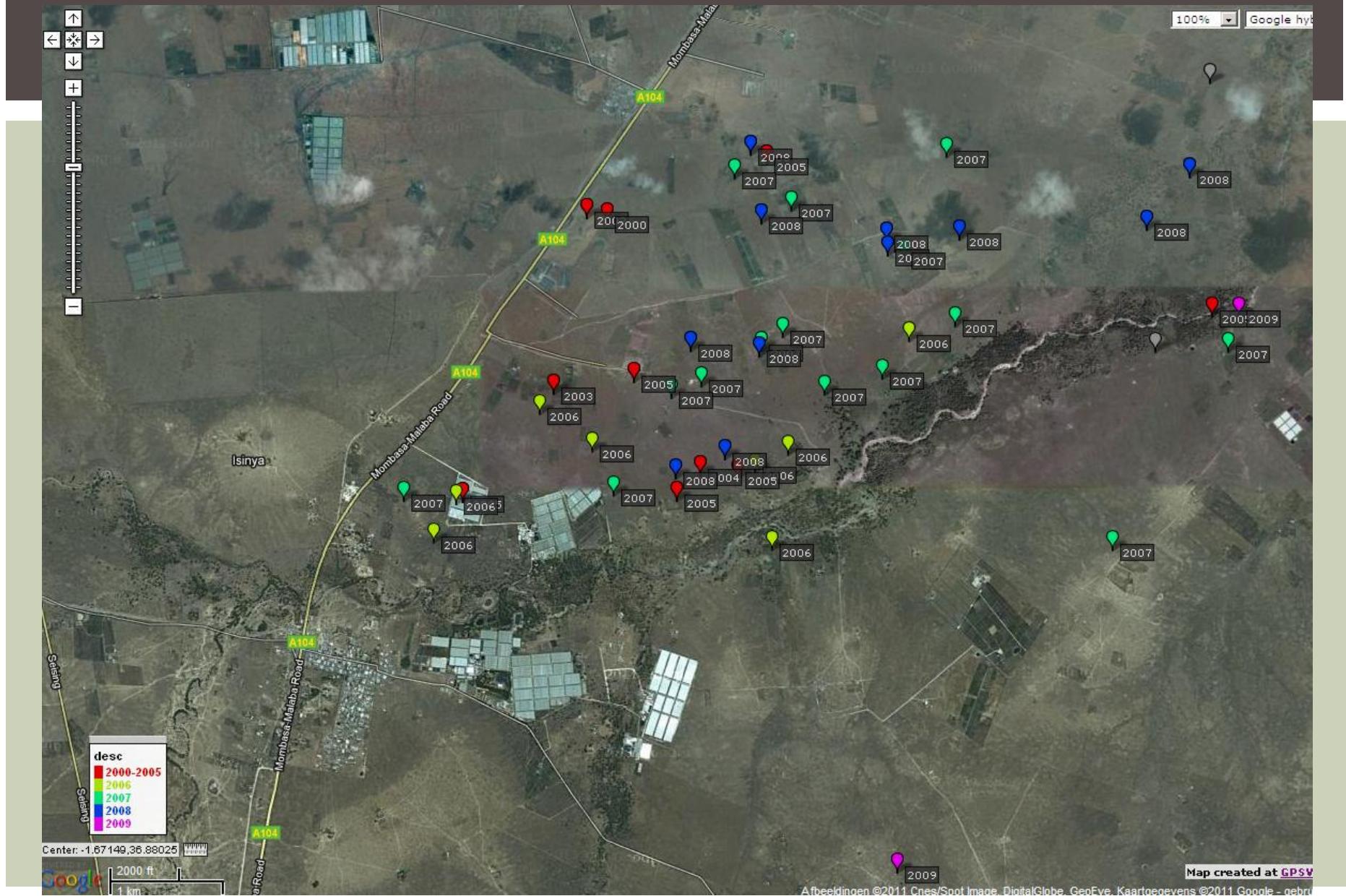


14-01-2003



02-10-2010

# DRIED WELLS BY YEAR





# ABANDONED ACTIVITIES



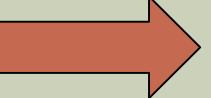
Irrigation (ksh 15000/acre/m)  
av 0.5 acre in use. Stopped or using  
waste water/illegal river pumping



Milk/manure/offspring sales stopped or  
reduced: ksh 30.000 per hh/month

## RESEARCH RESULTS

2009: flower, eucalyptus and poultry farms have **32 deep boreholes** which, due to overpumping, caused the drying of at least **56 shallow wells**

2011 update: approx. **100 dry wells**,  
@ **7 litres per rose**  **1.4 million m<sup>3</sup> of water exported/yr** (lake: 1km<sup>2</sup> 1.40m deep).

Fear is that **groundwater table** has fallen at least **50 metres** over the last 10 yrs.

## FLOWERS ROSY FOR WHOM?

P.J. Dave Flower companies employ **2,000-4,000 immigrant workers** (seasonal fluctuations). Wage levels: €60-85/month.

→ **Total salary costs: €180-250,000/mnth.**

November 2008: P.J. Dave companies delivered **200 million stems/year** to the Dutch auction = an **annual turnover of some €55 million**.

→ **Net annual profit appr. €15-20 million.**

**BUT:** The local people lost their **shallow wells, contracts with supermarkets, upgraded cattle**, and are faced with more **time and money** to have water at their doorsteps.

# ECONOMIC LOSS DRIED WELLS

- Distance/time to collect water elsewhere. Av distance:
  - Livestock: previously 378 m present: 3776 m
  - Domestic: previously 96 m present: 3796 m
- Litres water initially drawn/day (av 27 wells): **1,930 litres (running costs/month = ksh 3,160/well)** for 27+117 hh
  - previous costs: **Ksh10/day** for 2000 litres/day:
  - present costs: **Ksh 1000 – 3000/day**
- Loss init. investm.(cash&kind): **Ksh 294,235/well**
- Mitig. costs: deepening/covering: **Ksh 40,037/well),**
- Roofwater harvesting, gutters, storage tank, pipes, transport (car (20%), donkey(carts)), (excl labour): **Ksh 57,963**

## ECONOMIC LOSS DRIED WELLS CONT'ND

- Loss home consump. from impr. breeds/irrig. produce
- Loss of commercial sale of farm produce (milk, veget.)



100 dry shallow wells: € 600,000

- Loss hh economy for 500 affected households  
€ 3,000,000 annually



- 100 shallow wells:  $100 \times 340,000 = \text{Ksh } 34 \text{ m}$
- New equipment for 500 hh \* 60,000 = Ksh 30 m = € 600,000
- Extra payment:  $100 \times 2000 \times 365 = \text{Ksh } 73 \text{ m /yr} = € 700,000/\text{yr}$
- Loss home cons. 500 hh @ Ksh 30,000 \* 12 = € 1,800,000/yr
- Loss of commercial sale: 500 hh av 0.5 acre  
=  $250 \times 12 \times 15000 = \text{Ksh } 45 \text{ m}$  € 450,000/yr

# 2011: MORE ENVIRONMENTAL DESTRUCTION



Trees falling



Natural honey lost

# POVERTY LEADS TO MORE ENVIRONMENTAL DESTRUCTION



Sand, which holds and protects the water for the shallow wells and aquifer recharge, is being exported outside the district to the construction industry in Nairobi and beyond.

Individuals start a business of drilling boreholes for selling water Ksh 2,000 for 4000 litres (incl delivery) or Ksh 30/drum (210 l) or Ksh 3 (jerrycan (20 litres)

# GROWING OPPOSITION



KENYA INTERNATIONAL FILM FESTIVAL  
23 oct - 3 nov 2012

## DANGEROUS FLOWERS

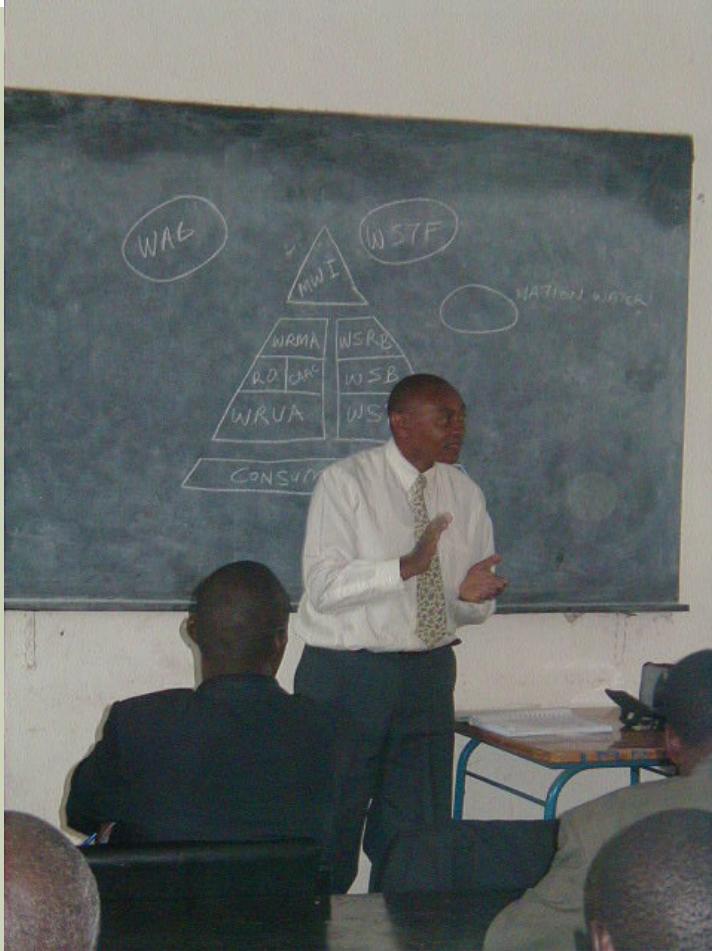
A documentary film by Khamis Ramadhan

VENUE: ALLIANCE FRANCAISE, NAIROBI

Saturday, 27 October 2012

TIME: 2.30PM

# SOLUTION: WATER USERS WORKSHOP?



# SOLUTION: NEW (DUTCH) TECHNOLOGIES?

The Waterboxx: aims to increase chances of success of growing (fruit)trees and possibly food crops



Dutch Rainmaker: windmill to 'catch' water from air (8,000 litres max/24hrs) – expensive investment (corporate social responsibility?)



# IF NOT SUCCESSFUL: THE 2005 'SOLUTION'?

Yes Africa Works!

But how sustainable  
and fair will it be?

## Councillors warned on farm raids

■ PAUL JIMBO  
AND WILLY OPINDI

THE Government yesterday cautioned Olkejuado County Council councillors against inciting a local clan to invade two flower farms in Kajiado District.

District Commissioner Kenneth Lusaka warned that the civic leaders would be held responsible if Kaputiei clan effected its threat to raid P J Daves and Isinya Roses flower farms.

Last week, local herdsmen served the flower farmers with "quit notices", accusing them of discharging toxic wastes into Olkinos River, their only water source.

The herdsmen also accused the farm owners of grabbing their ancestral land to set up the flower farms.

But Lusaka said a recent environmental impact report had given the firms a clean bill of health.

# ‘ASHE OLENG’ FOR YOUR ATTENTION!



The authors would like to thank the ASC, SEUCO and CoCooN for support in conducting the above research project. Info: [Rutten@ascleiden.nl](mailto:Rutten@ascleiden.nl)