



# Sasumua: linking a landscape and institutional mosaic to climate change in Kenya



World Agroforestry Centre

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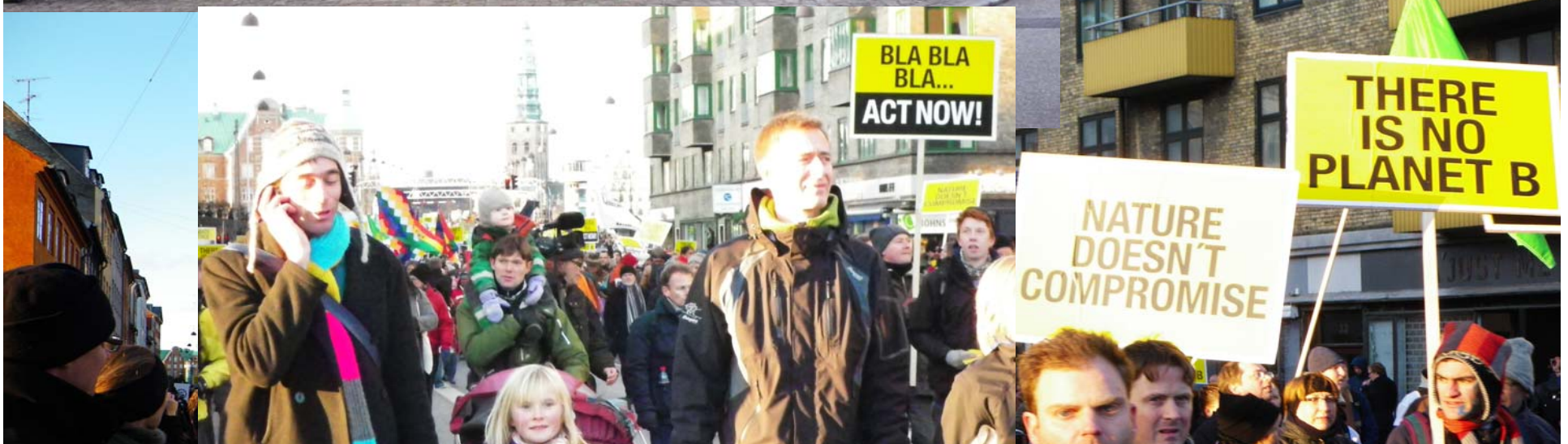
Meine van Noordwijk and Thomas Yatchew  
World Agroforestry Centre (ICRAF)

2009 Forest Day 3, Learning Event

# Climate Security



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Globally Appropriate Mitigation Actions (GAMA)

does sum of NAMA's

add up to GAMA?



Nationally Appropriate Mitigation Actions (NAMA)

are NAMA's based  
on GAMA's?

**Landscape  
approaches to  
adaptation +  
mitigation**

Locally Appropriate Mitigation Actions (LAMA)

# *Trees on farms: Tackling the triple challenge of mitigation, adaptation and food security*

Trees on farms address climate change mitigation and adaptation, and food security by storing carbon, buffering against climate-related impacts and providing additional income through tree-based products



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Policybrief

## Trees on farms: Tackling the triple challenge of mitigation, adaptation and food security



Trees help fight climate change by storing carbon. They buffer against weather-related production losses, enhancing resilience against climate impacts. And trees on farms provide additional income and diversity of food sources through tree-based products.

### Key Points

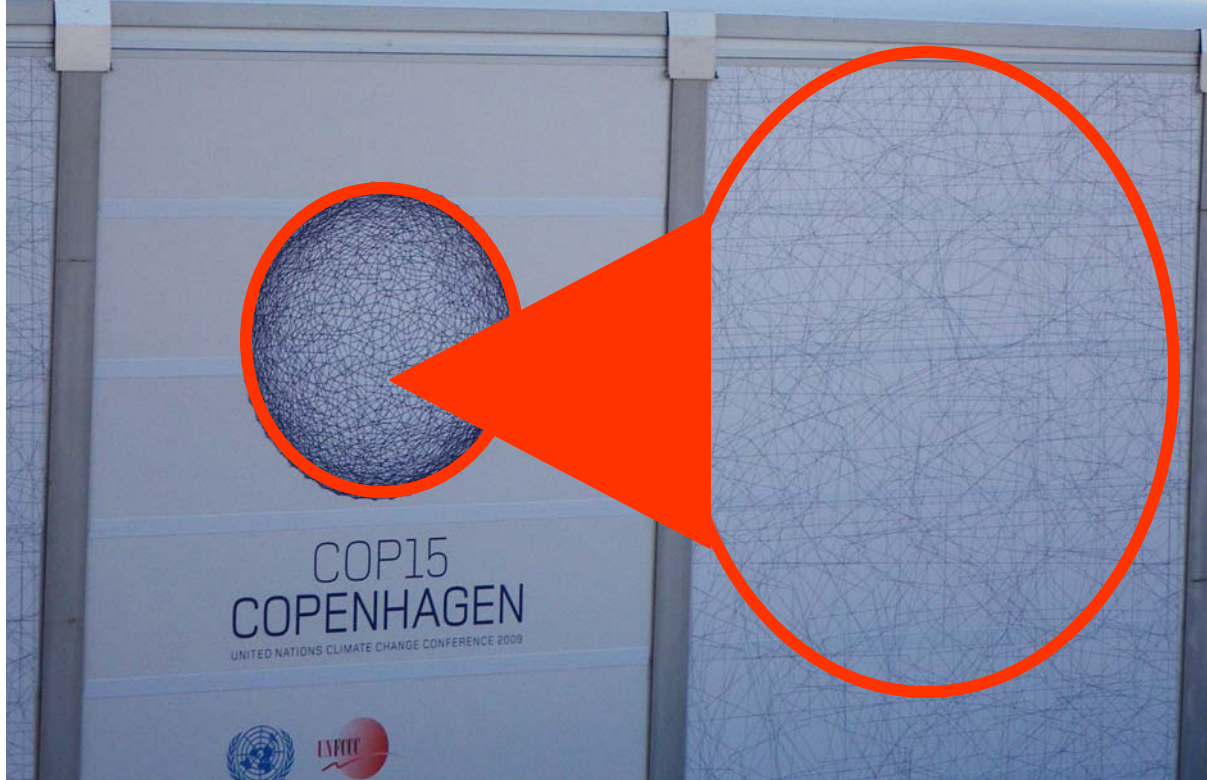
- Trees on farms sequester carbon and contribute to mitigating climate change.
- Trees on farms enhance resilience to climate variability.
- Tree-based agricultural systems improve food security and livelihoods.

### Policy recommendations

- Increased adoption of agroforestry should be supported through finance for agricultural development and adaptation as well as mitigation.
- Payments for environmental services – including carbon finance – should be geared towards increasing the extent of trees on farms
- More support is needed to increase the contribution of tree-based crops to smallholder incomes, thus diversifying income sources and increasing food security in the face of climate change.



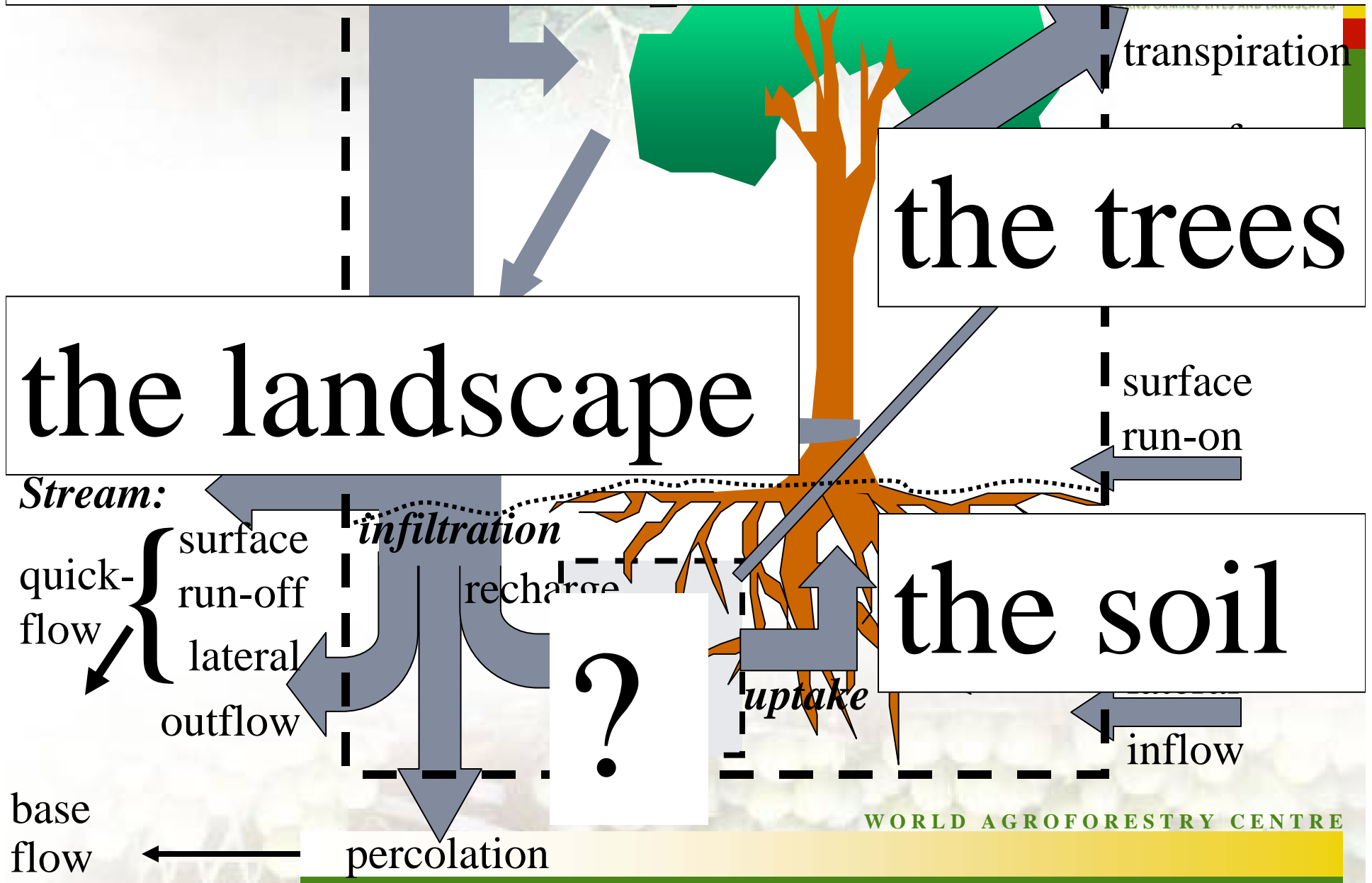
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- Administrative mosaic
- Ethnic and social affinity mosaic
- Watershed hierarchies
- Patchwork of vegetation
- Patchwork of land access/ forest class rules

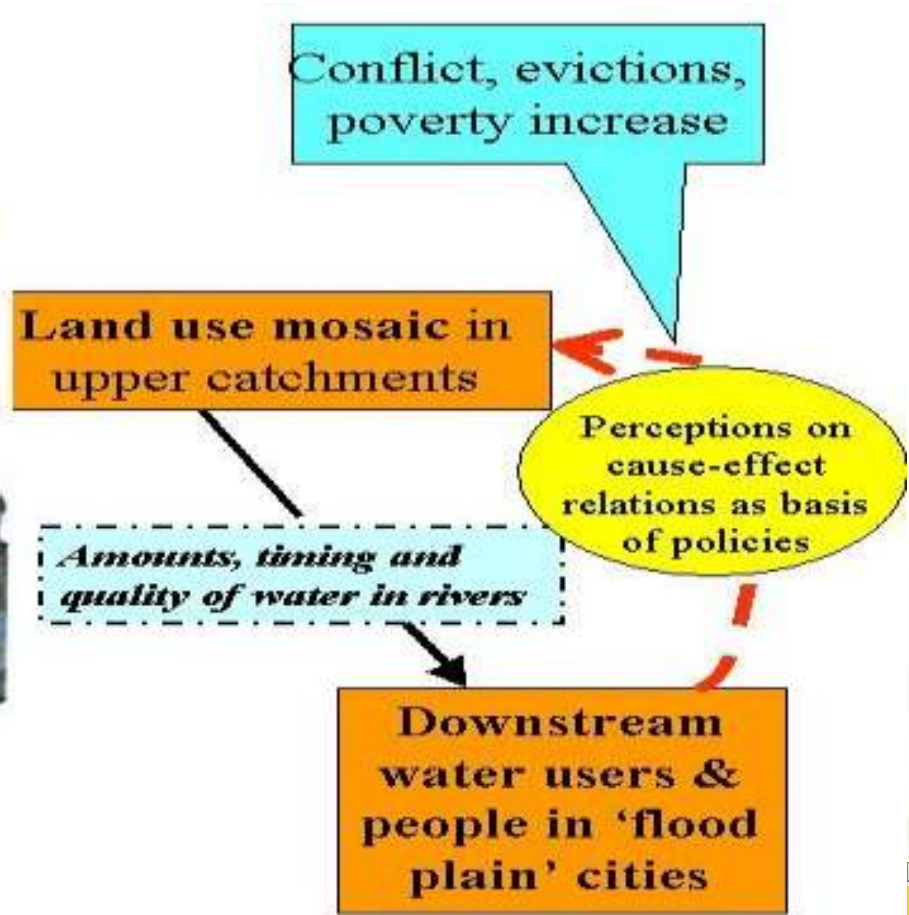
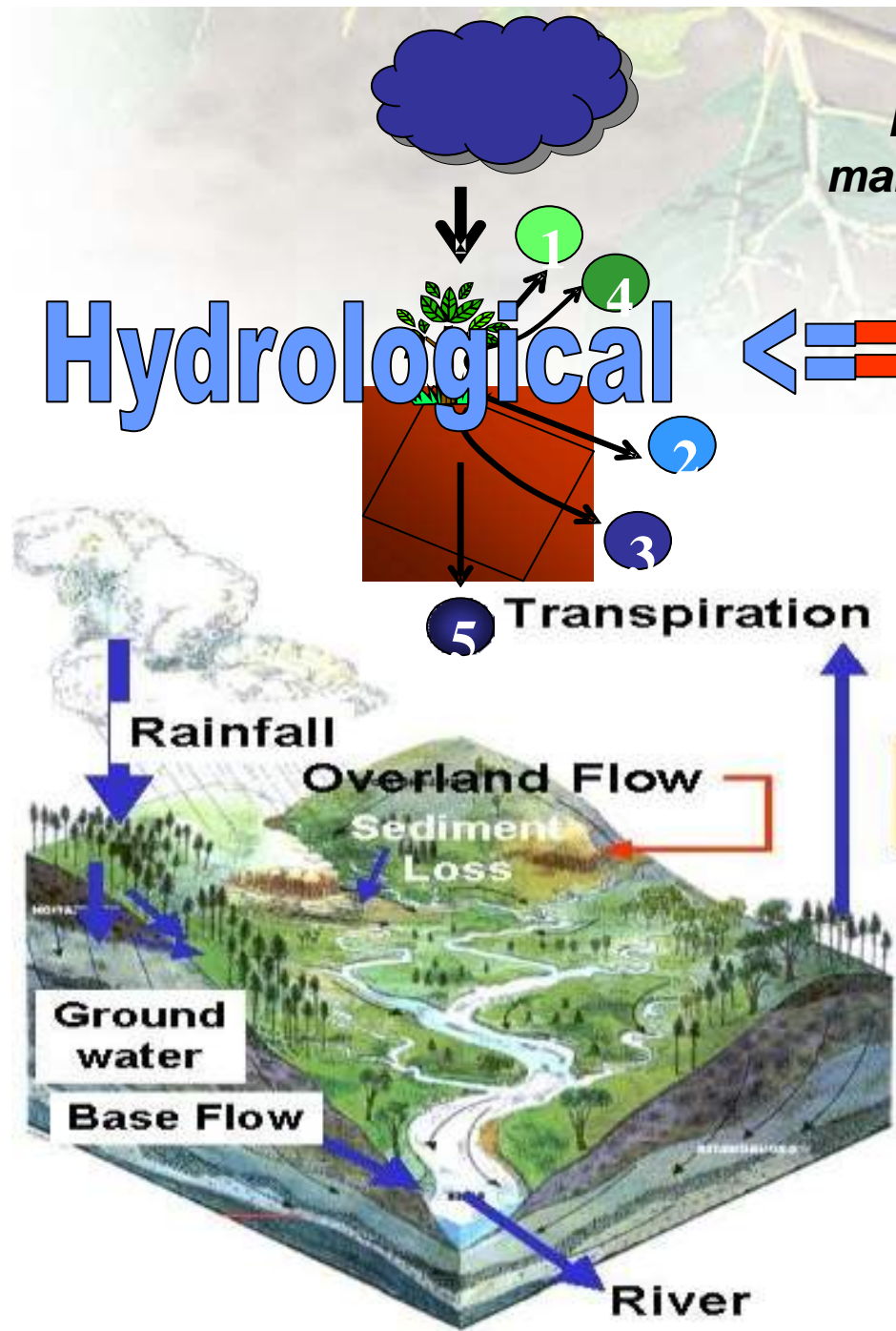


# What matters most in a 'forest':



*Myth-use of forest hydrology for maintaining political control over land*

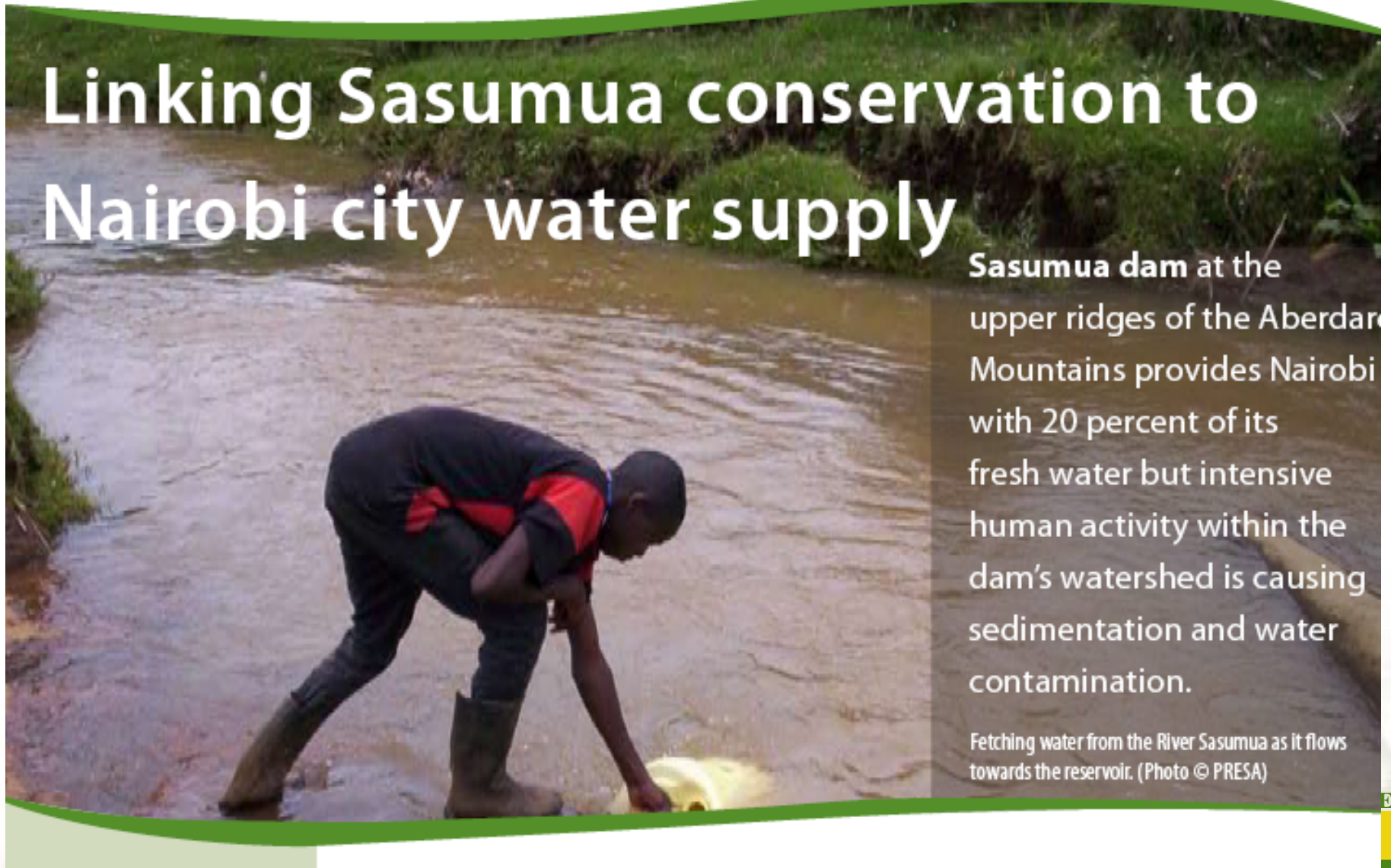
# Hydrological $\Leftrightarrow$ Political reality



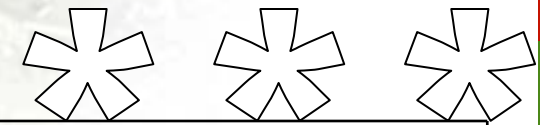
# Linking Sasumua conservation to Nairobi city water supply

**Sasumua dam** at the upper ridges of the Aberdare Mountains provides Nairobi with 20 percent of its fresh water but intensive human activity within the dam's watershed is causing sedimentation and water contamination.

Fetching water from the River Sasumua as it flows towards the reservoir. (Photo © PRESA)







# RUPES-I synthesis

<p>Paradigm CES: <i>'Commoditized ES'</i> or markets for commoditized environmental service procure-ment (or land use proxies with periodic full impact study)</p>	<p>Paradigm COS: <i>'Compensating Opportunities Skipped'</i> or paying land users for accepting man-datory or volun-tary restrictions on their use of land</p>	<p>Paradigm CIS: <i>'Co-investment in Stewardship'</i> and co-manage-ment of land-scapes for redu-cing poverty and enhancing ES, sharing risk and responsibility</p>
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## Conditionality

'Real' ES,

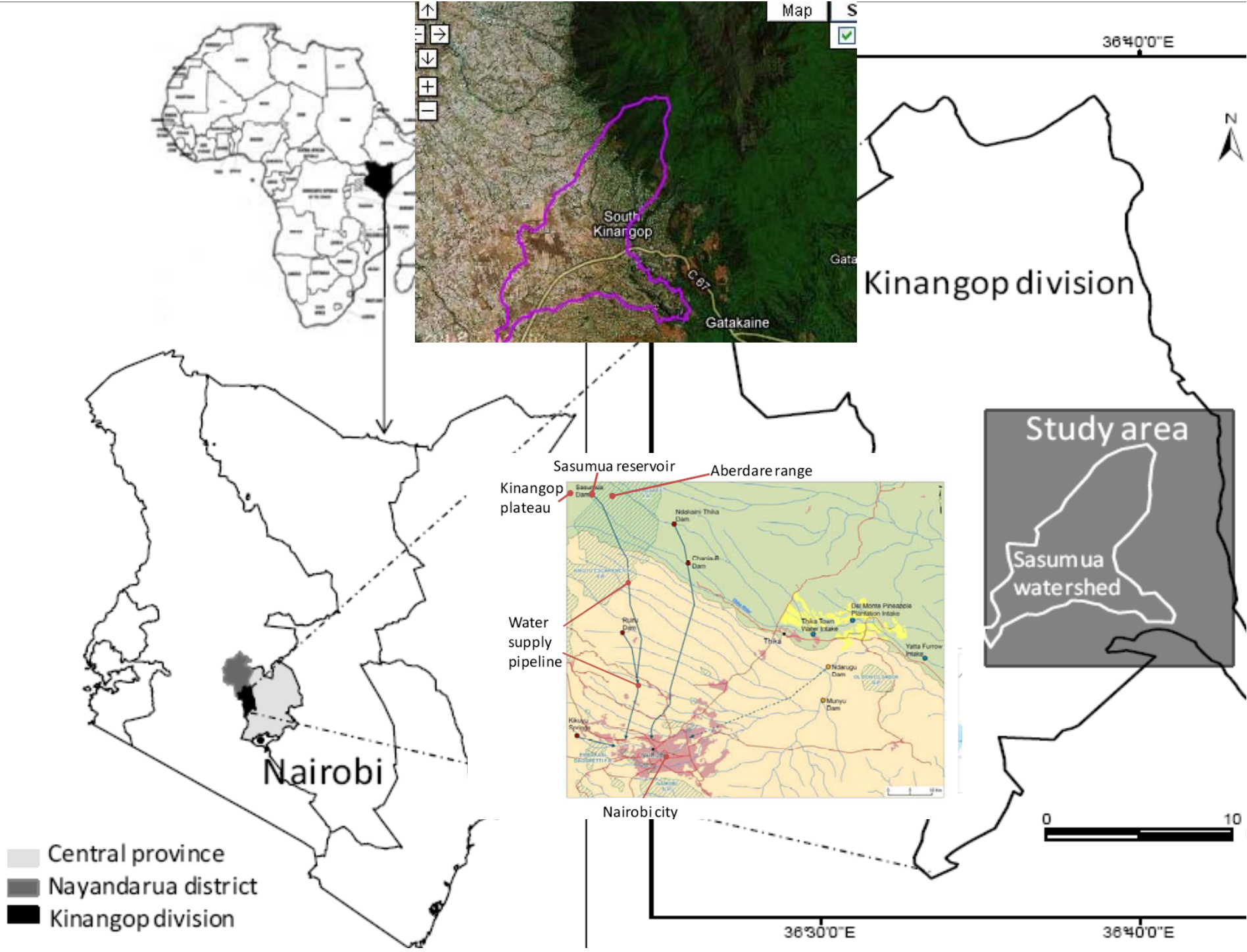
recurrent

Proxies,

recurrent

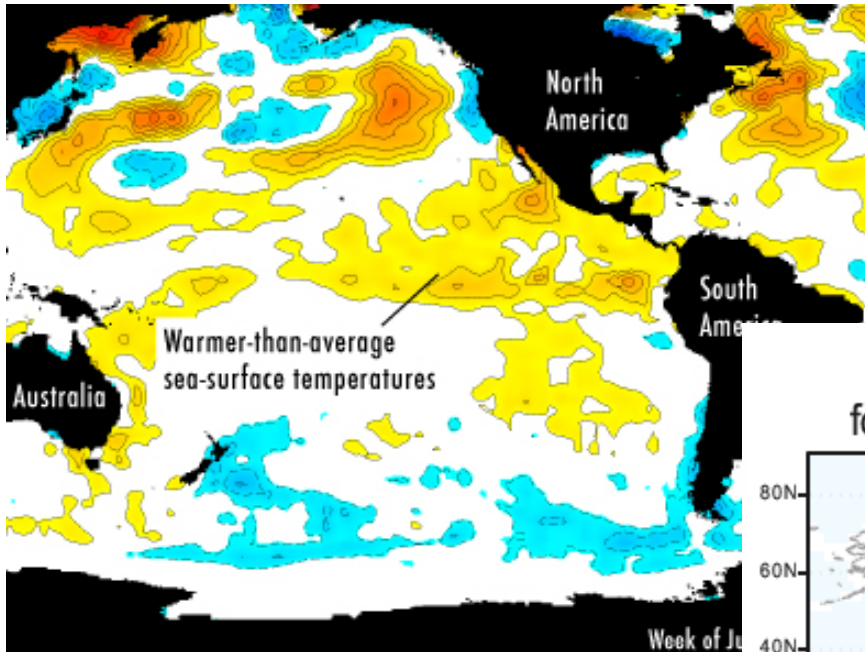
Plans/ACM,

investment



- Central province
- Nayandarua district
- Kinangop division



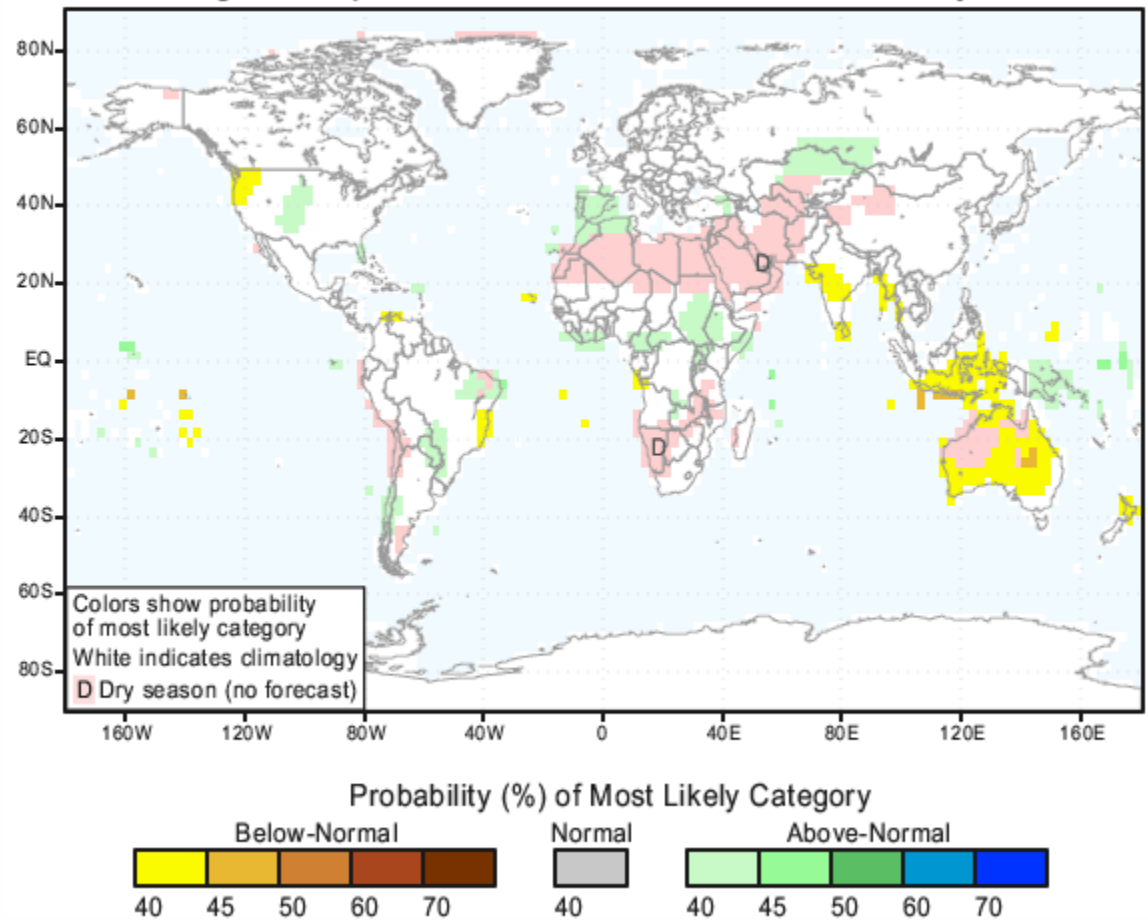


Predictability of rainfall at growing-season scale is still low

July 2009 Forecast of El Nino conditions: above-average rainfall in Kenya

In fact: late start of rains, below-average total as yet; water rationing in Nairobi

IRI Multi-Model Probability Forecast for Precipitation for August-September-October 2009, Issued July 2009





~ 50 NTU



Dam & spillway  
under repair



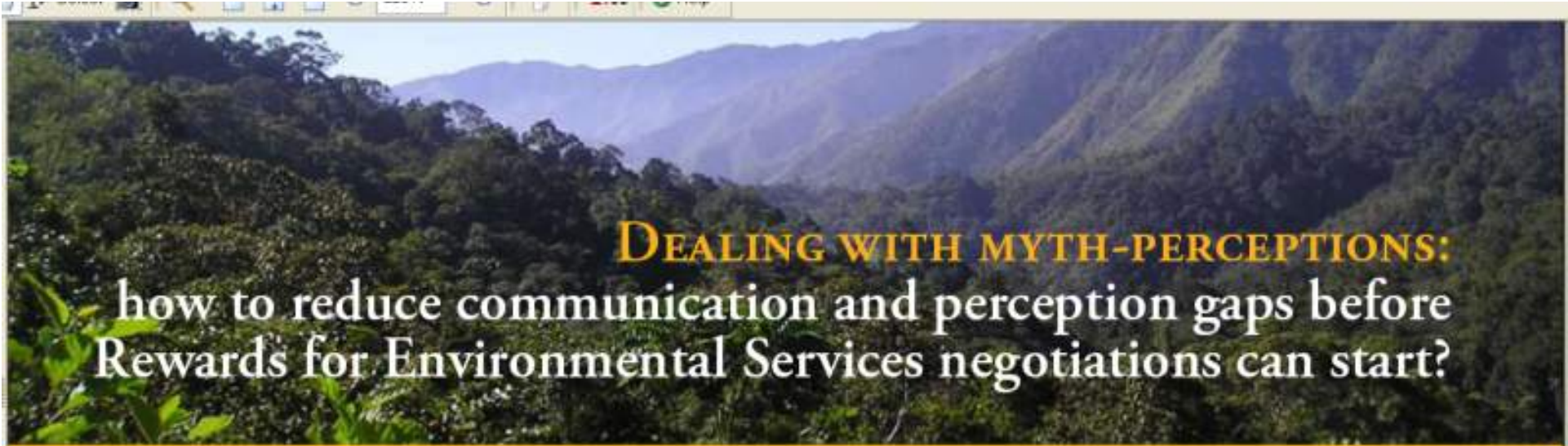
Chania river intake

5-10 NTU



Nairobi drinking water (<5 NTU)





## DEALING WITH MYTH-PERCEPTIONS:

how to reduce communication and perception gaps before Rewards for Environmental Services negotiations can start?

# Lesson 2

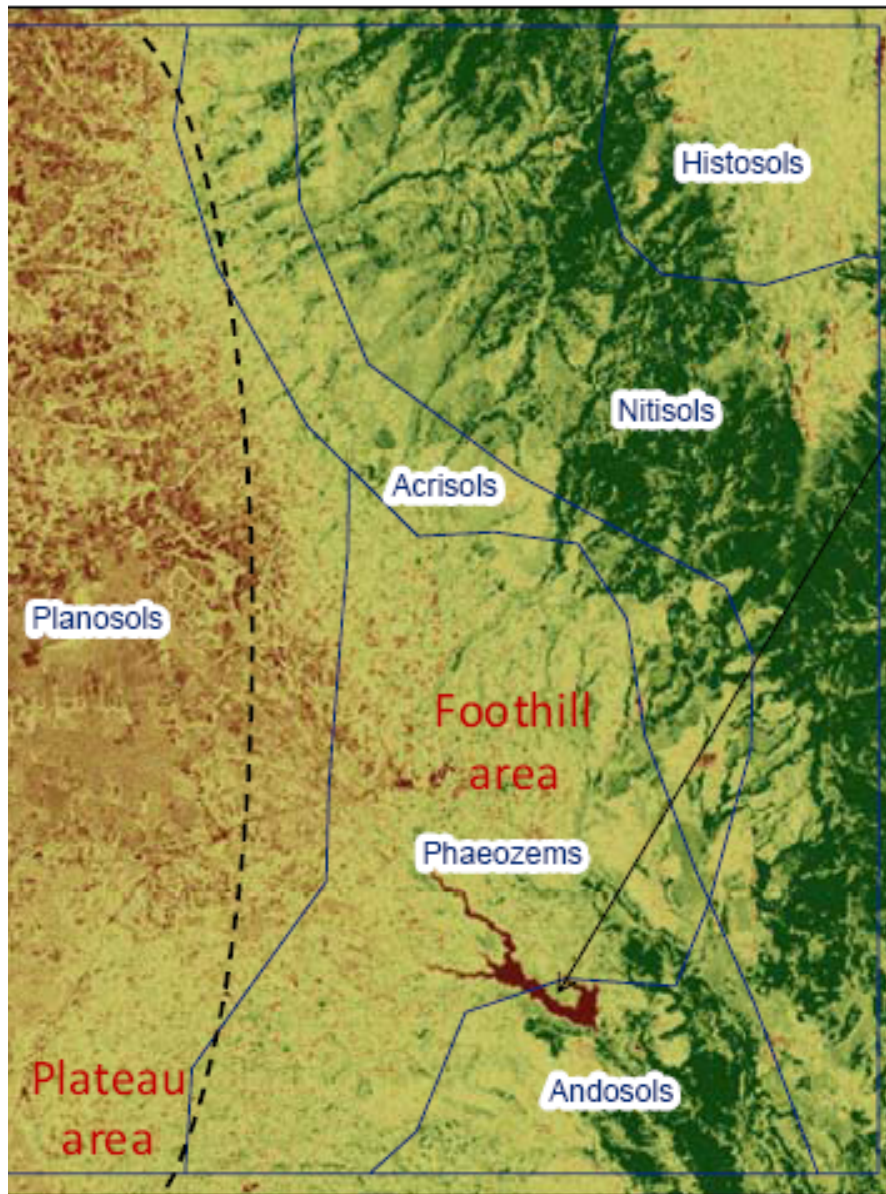
## HIGHLIGHTS


Rewards for environmental services (RES) schemes should become a sustainable mechanism, not a project-based one per se. At its

1. Realistic design and improvement of environmental services can result in

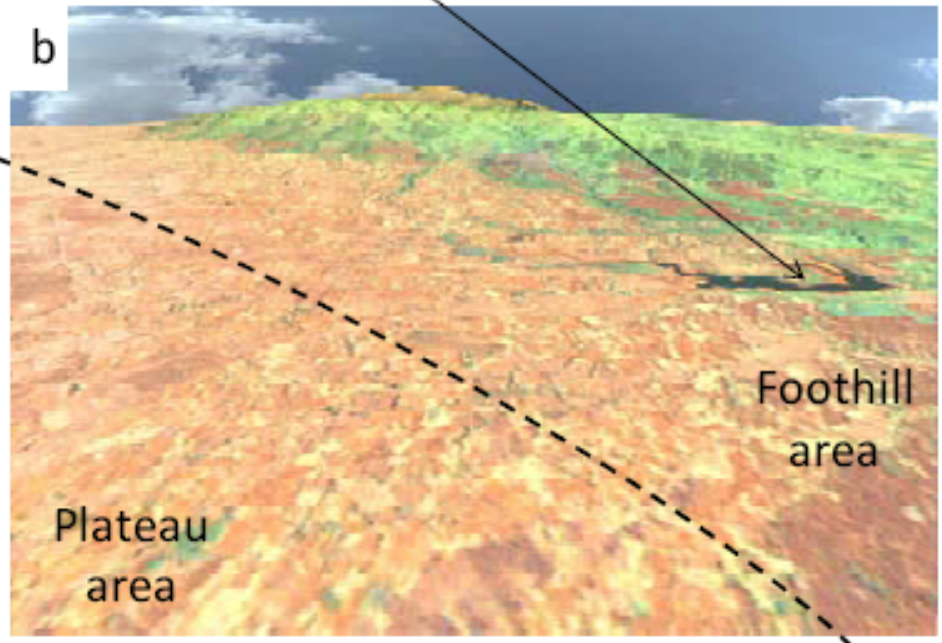
KEY

# Realistic



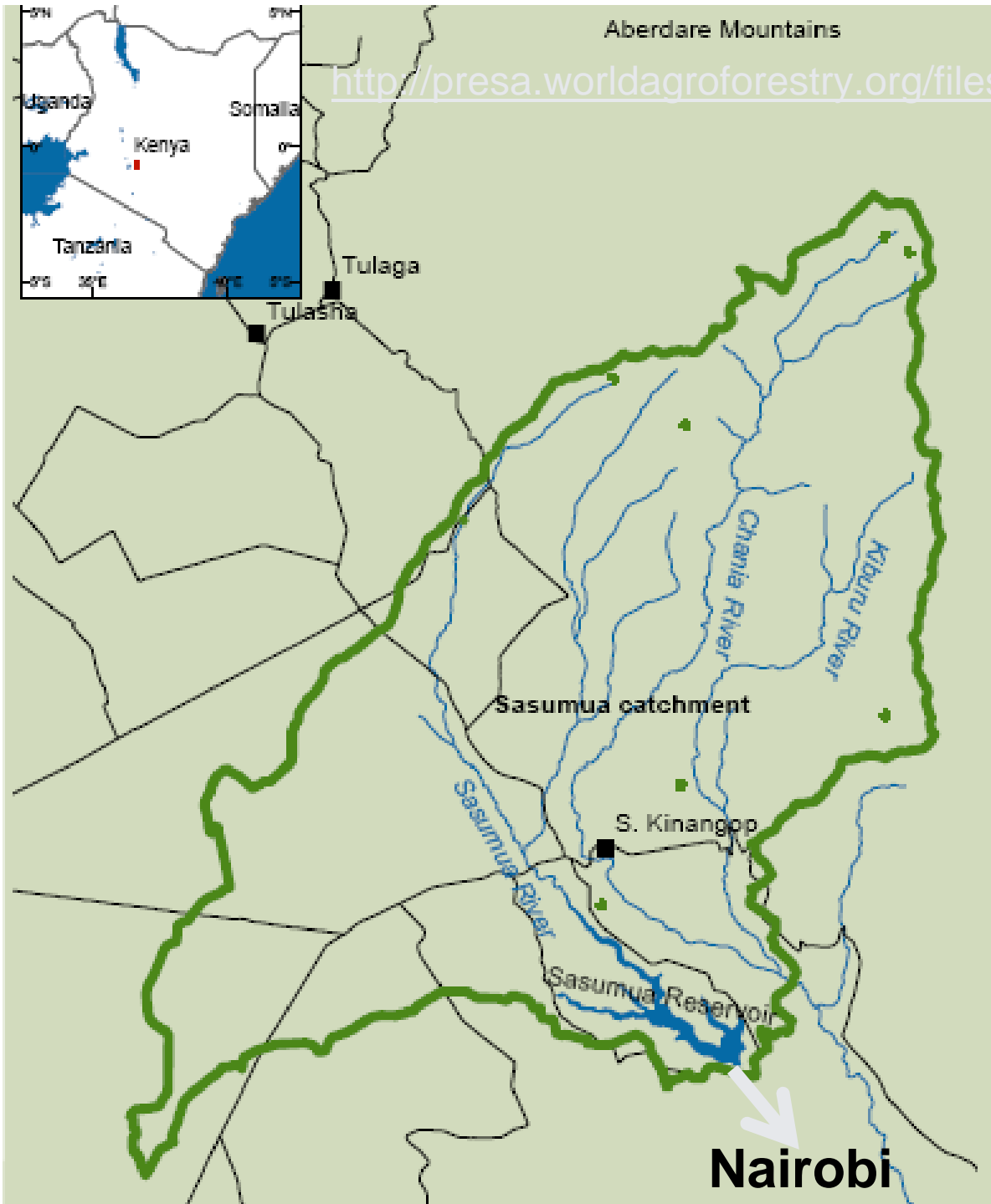
Soil condition  Good

Sasumua reservoir



Terrain and soil condition data source  
Vågen (2009) and soil type data  
source Gathenya (2009)





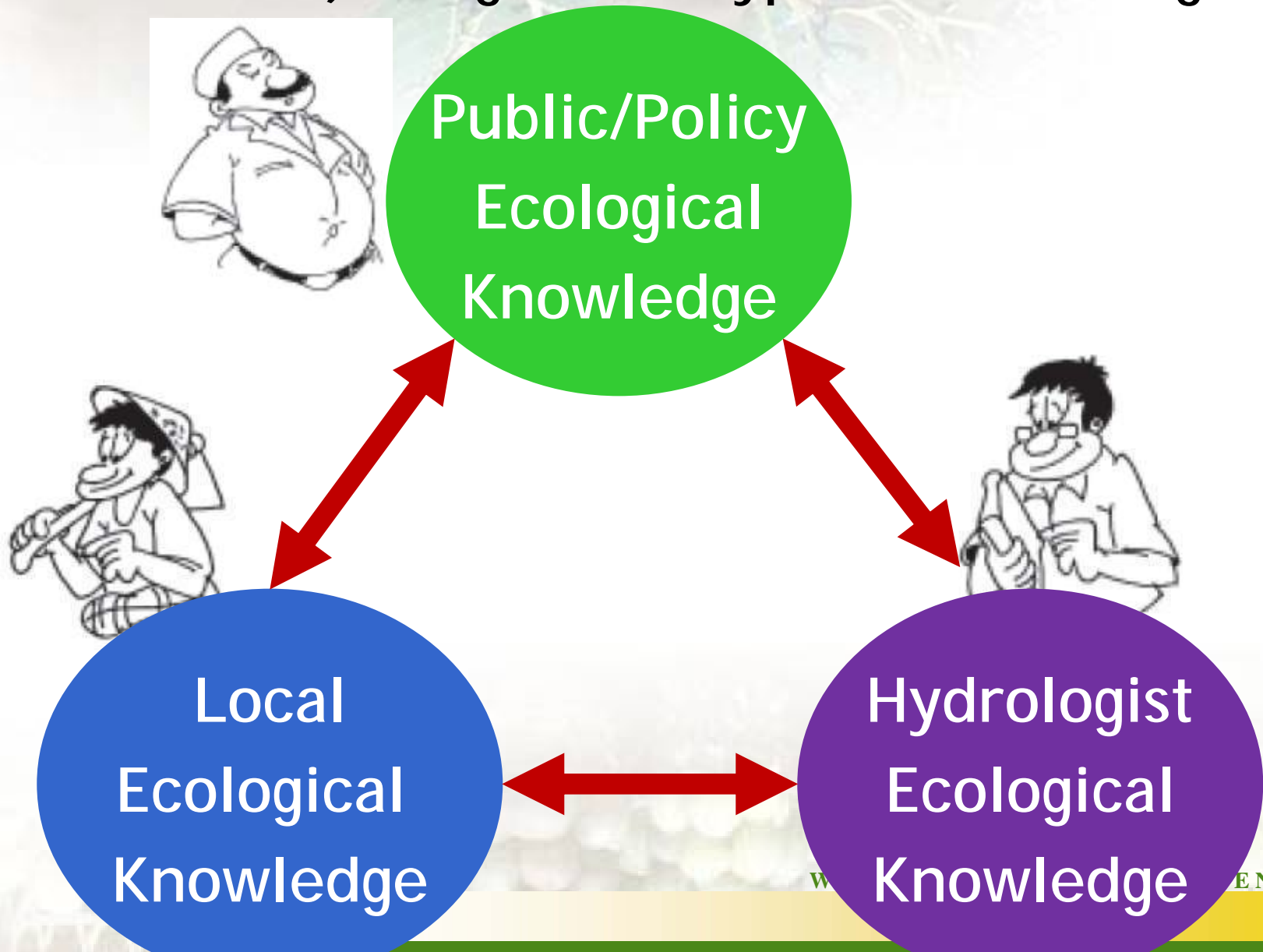
## Stakeholders

- Local farmers organizations
- Nairobi City Water and Sewerage Company
- Water Resources Management Authority
- Athi River Water Services Board
- Kenya Forestry Service
- Ministry of Livestock.

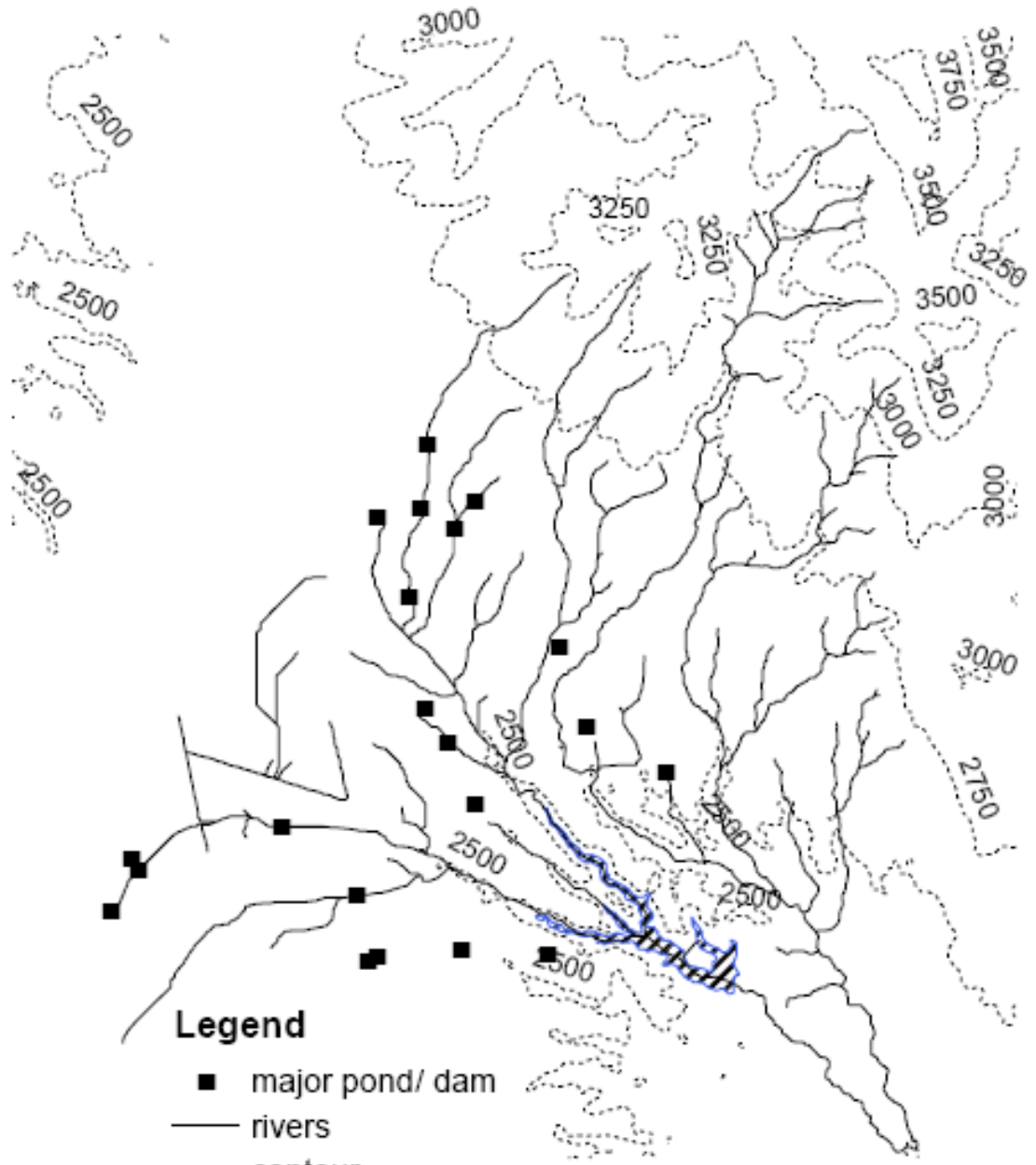
## Research Partners

- World Agroforestry Centre (ICRAF);
- National Environment Management Authority (NEMA) of Kenya
- Jomo Kenyatta University of Agriculture and Technology

Rapid/replicable Hydrological Appraisal (RHA: 6 months, 5k\$) integrates 3 types of knowledge







**Legend**

- major pond/ dam
- rivers
- - - - - contour
- ▨ Sasumua reservoir



Data source: ICRAF



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Direction of frost appearance



Protected crop close to tree shelter



Unprotected crop away from the tree shelter





# Lesson 3

## Social Mobilization and Local Awareness of Rights and Opportunities for Environmental Services Market



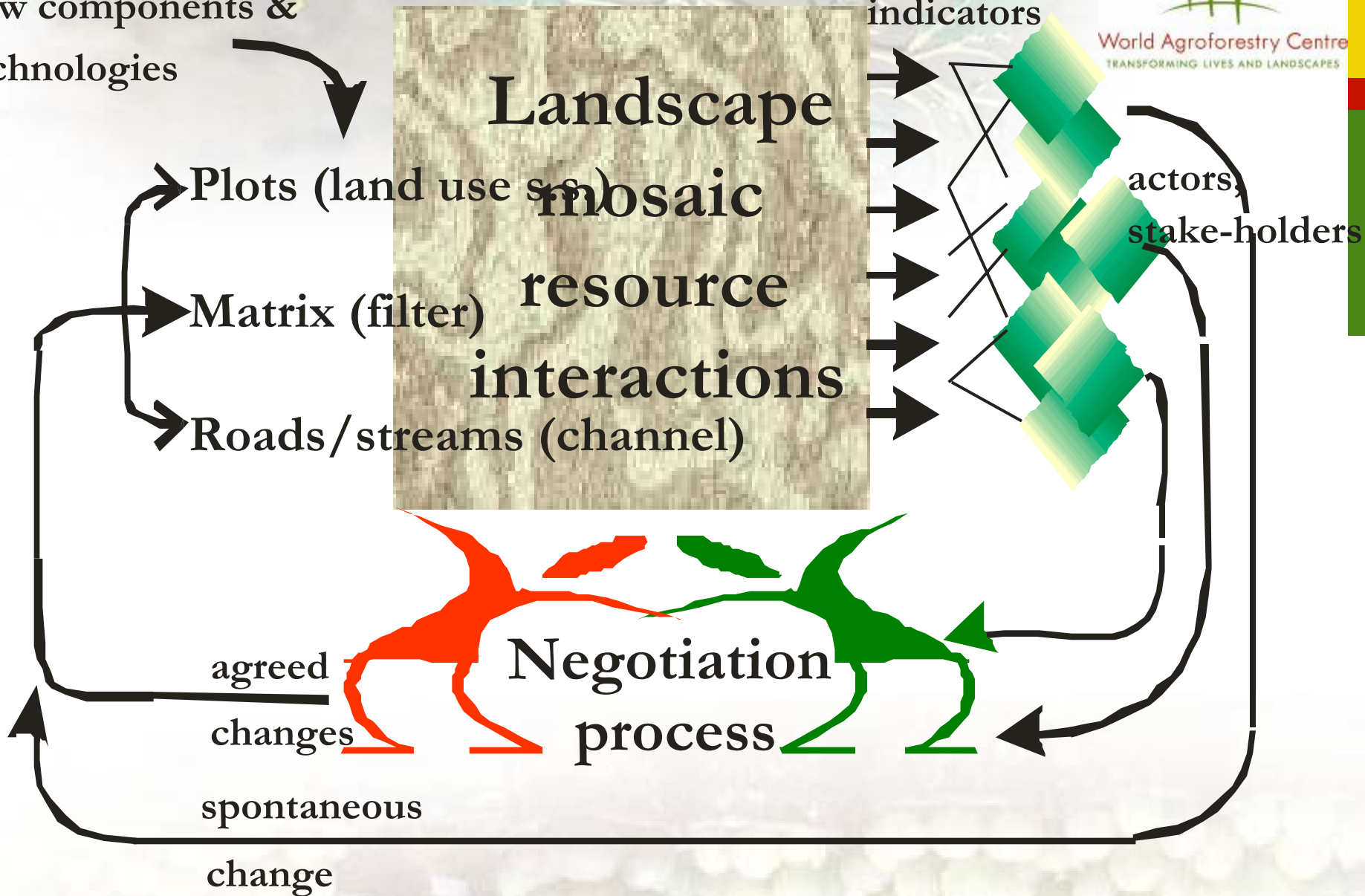
# Voluntary

### HIGHLIGHTS

Social mobilization is a crucial step in initiating a reward for environmental services (RES) scheme. Traditionally social mobilization is perceived as a community-based call to action for political and social commitment by strengthening human and institutional resources development at local level. As social mobilization develops, it takes advantage



new components & technologies



WORLD AGROFORESTRY CENTRE  
**Negotiation Support System: tool + process**



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## Lesson 4

# National Policy Dialogue on Environmental Services Supply through Regulation, Voluntary Agreements and Markets

### HIGHLIGHTS

Environmental service (RES) schemes should not be seen as an incentive-based mechanism. Enabling policy conditions also need to exist to ensure that the schemes are operational, and that there are opportunities for RES

# Conditional







**Figure 41 A local farmer clearing eucalyptus woodlot with intention to replace it with native tree species.**





## Pro-poor Rewards for Environmental Services in Africa

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### About PRESA

PRESA promotes healthy landscapes and sustainable rural livelihoods through innovative market-based reward mechanisms.

PRESA will facilitate negotiations between ecosystem stewards and beneficiaries towards fair and effective agreements.

PRESA will engage with a range of stakeholders in Kenya, Tanzania, Uganda and Guinea, to catalyze policy support and private sector participation in environmental service agreements.

PRESA will build a community of practice across Africa to share lessons, tools and experience, advise local stakeholders, and provide training. [Click for more](#)

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## Conclusions:

1. NAMA between LAMA and GAMA
2. LAMA: Mosaic of mosaics
  - Administrative mosaic
  - Ethnic and social affinity mosaic
  - Watershed hierarchies
  - Patchwork of vegetation
  - Patchwork of land access/ forest class rules
3. Realistic, Conditional, Voluntary & Pro-poor: equally large challenges in all 4 aspects