CLIMATE CHANGE AS A NEW VULNERABILITY: IMPACTS ON AGICULTURE & FOOD SECURITY IN KENYA

Development and Adaptation Days at COP-12, 11-12 November 2006, Nairobi, Kenya

Badly eroded areas in Nyando plains. Kenya.

Photo: Marie Rarieya, 2005

Marie RARIEYA, Doctoral Fellow, Rensselaer Polytechnic Institute. Emaill: rariem@pi.edu

RESEARCH SITES

- SAURI—THE MILLENIUM VILLAGE PILOT PROJECT
- NYANDO PLAINS—THE WORLD AGROFORETSRY PROJECT

SITE CHARACTERISTICS

•Diverse agro-ecological characteristics

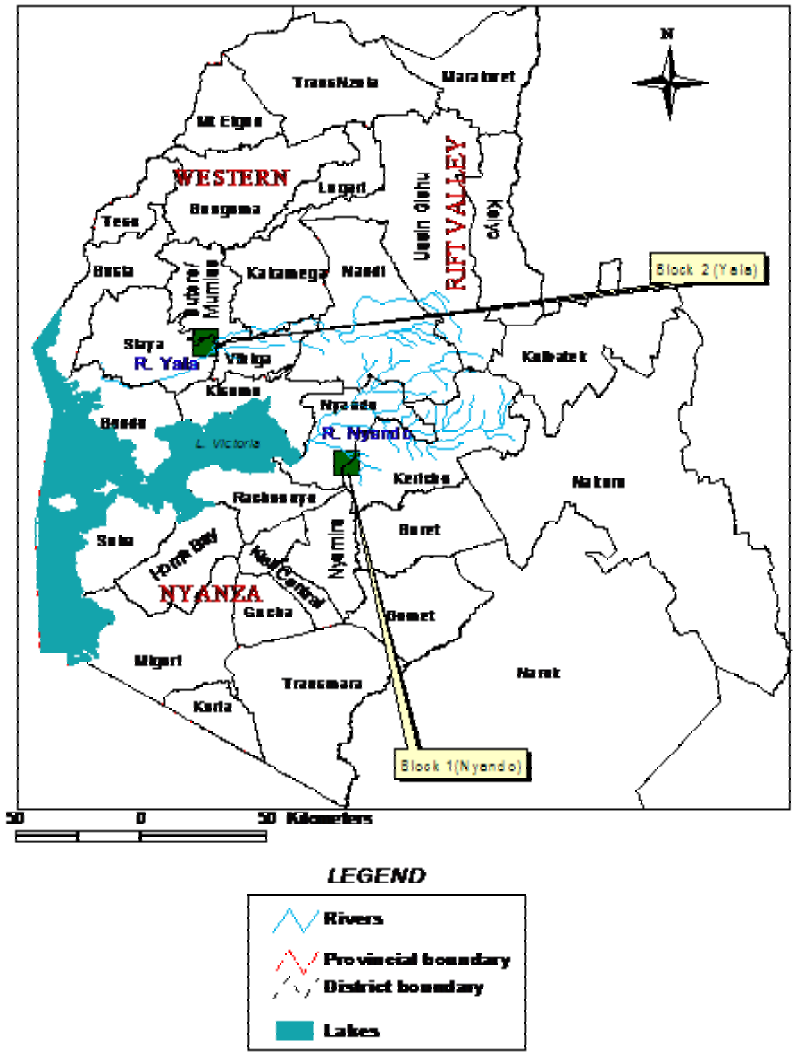
•Environmental Degradation

•Pervasive poverty

•Demographic pressure

•Subsistence farming with limited commercial activity

Experiment Blocks: Yala and Nyando



INTRODUCTION

... we acknowledge that climate is emerging as one of the most serious threats that humanity may EVER face.

H. E. Moody Awori, Vice-President of Kenya
(UNFCCC Conference, November 6, 2006)

INTRODUCTION

Floods and Droughts are becoming more frequent & Severe

Major Floods

- Past: 1961, 1963/64, 1968, 1977/78, 1982, 1985, 1990
- Recent: 1997/8 El Nino, 1999-2001, 2003

Major Droughts

- Past: 1949, 1953, 1954, 1969, 1984,
- Recent: 1999, 2000, 2005/06--3.3 million people reported facing starvation

Sources: Ogallo (2006), UNEP (2006) GoK (2006)

FOOD SECURITY IN KENYAN CONTEXT

- Researchers describe sub-Saharan Africa as having the world's major "Poverty and Hunger Hotspots" (Swallow et al., 2003)

- Food access/supply to keep pace with population growth, especially in rural areas remains unmet

As would be expected, the agricultural sector has been seriously hit

- In Kenya, Major Short Falls in Food Supply Recorded have been Associated with Rainfall Deficits—such as the1984/85, 1999-2000

IMPACTS OF CLIMATE VARIABILITY & CHANGE

- The Present Food Insecurity
- Recurrent Floods and Droughts
- Environmental Degradation
- Sectors affected: Roads, Water & Sanitation, Health, Energy, disaster risk management etc

Katuk-Odeyo Gullies, Jimo East, Nyando

Photo: Marie Rarieya, 2005

Impacts of Climate Variability

- **Recurrent Floods and Droughts**— Contributes to vulnerability through displacement of people, water stress, famine, resource use conflicts etc

Source: DMCN/UNEP 2004

FARMERS AND ADAPATION

- Besides climate change exacerbating environmental degradation, today, farmers are experiencing a shift in:
  - the time of planting and harvesting
  - While researchers are confronted with new challenges in which interdisciplinary research seem critical—e.g. Seed breeders ought to work closely with meteorologists
- Climate detects the types of crops/trees that can be grown in a specific locality
  - Need for seeds appropriate for a given forecast

FARMERS AND ADAPATION

➢ THE CHALENGE

- Many farmers interviewed do not yet have strategies for responding to the changing conditions and vulnerabilities they are faced with

– Very few, like Prof. David, Wasawo, have taken initiative to make use of climate information at local level

– Professor Wasawo is what Harry Collins calls “transactional experts. He is able converse in terms of more than one stakeholder group –in this case farmers and scientists

– Figures like Wasawo have the capacity to move between and facilitate the development of “trading zones”—different kinds of expertise that can “hammer out coordination” will be crucial

CLIMATE CHENGE INFORMATION: WHY THE FOCUS?

- Ability to forecast weather--seasonal & anomalies-- is important
  - Experts in the Greater Horn of Africa region realize the need for climate information to advise their respective governments on climate related issues.

- However, there is Information gap
  - Information needed by small-scale farmers and information provided by metrological services
  - Concerns about usability of seasonal climate information
    - ✓ Weather prediction needs to be weaved well into policy framework

GHA Countries (1997): Kenya, Uganda, Tanzania, Ethiopia, Sudan, Somali, Eritrea, Burundi, Djibouti & Rwanda

CLIMATE CHENGE INFORMATION: WHY THE FOCUS?

- Thinking in terms of vulnerability & Adaptation, a number of questions come to mind:

  - Is climate Knowledge readily accessible (in terms of sustainable resource management and use) by society to prompt adaptive strategies to reduce human vulnerability to extreme climate events?
  - How can we build the capacity of local community to cope with and adopt to these events?
  - How can we diversify (to other sectors) so that farmers depend not only on climate change sensitive sector like agriculture, but also participate in commercial activities?
  - What does adaptation mean in areas prone to floods or droughts pest and diseases outbreaks?

BUILDING APPROIATE ORGANIZATIONS, TECHNOLOGIES & EXPERTISE

- How do we effectively get climate information to small scale farmers most of who do not have the opportunity to read newspaper or listen to radio?

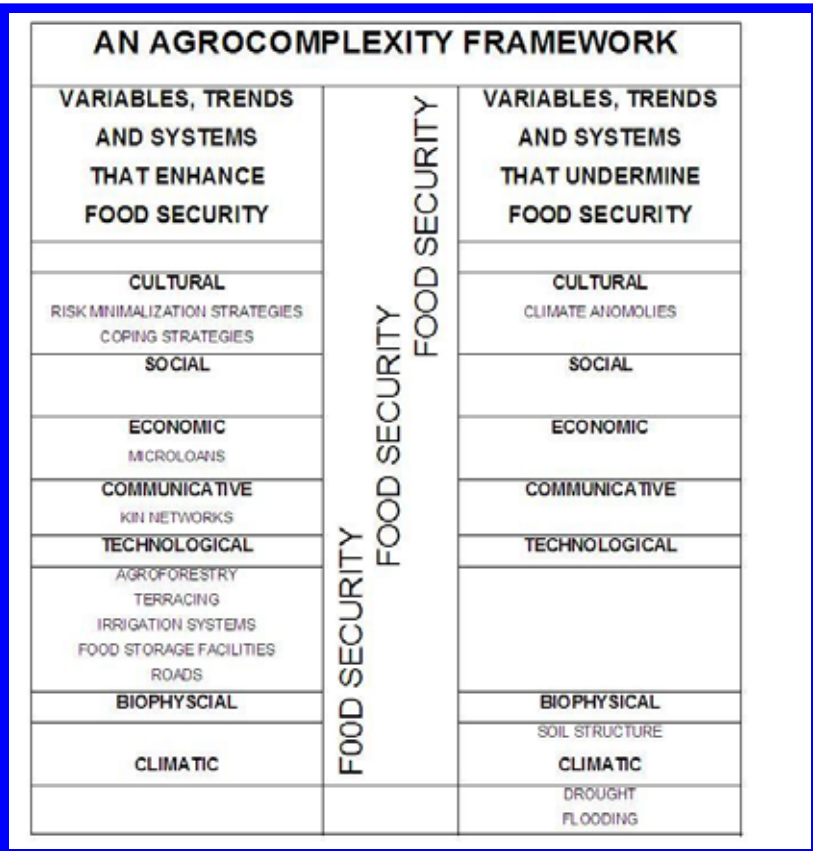
- How do we get the small scale farmer to appreciate that it is in her/his best interest of survival to take action in accordance with the information s/he receives?

  (David Wasawo, GHA-COF17, 1-3 March, 2006, Nairobi-Kenya)

- Organizations of many kinds can make a contribution. Key players include: Meteorological Department, Kenyan Universities, Breeders, Extension staff, Well designed information systems

IN PURSUIT OF "TRAING ZONES": THE CHALLENGE OF "AGROCOMPLEXITY"

- "Agrocomplexity" framework propose here acknowledges the need for multiplicity and interplay of variables, trends and scales that impact food production and availability



The concept of a "Trading Zone" by Peter Galison (1997) --explains *how* scientists from different fields work together—even if their interest, outlooks and practices dramatically differ

CONCLUSION AND REOMMENDATIONS

Policy should support:

1. the development & dissemination of a conceptual framework that facilitates recognition of multiple stressor affecting vulnerability
2. collaboration between divers stakeholders—governments, non-governmental organizations, multilaterals & local communities
3. the development of information systems that will facilitate *interpretation* of climate information and *deliberation* of alternative strategies

CONCLUSION AND REOMMENDATIONS

4. Farmers, scientists, & policy makers are likely to interpret weather information in different ways. It is therefore important to integrate the understanding of local knowledge with scientific knowledge. Experts should tap into local communities traditional early warning indictors and coping strategies

5. Strategy for action should play close attention to implementing policies that are sensitive to climate risks

   - Respective governments should encourage partnership & collaborative arrangements among the relevant academic institutions at national, regional and global levels

6. Need to conduct research into alternative livelihood opportunities for already vulnerable member of the society

THAN YOU

CONTACT:

Marie RARIEYA

Email: rariem@rpi.edu

Url: http://www.rpi.edu/~rariem/