



Theme: *Creating a nexus between research and policy for sustainable management of Africa's natural resources*



UNITED NATIONS
UNIVERSITY
UNU-INRA
Institute for Natural
Resources in Africa

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Session 1

Harnessing Land and Water Resources for Improved Food Security and Ecosystem Services in Africa

Chair: Prof. Paul Vlek (Director, WASCAL)

Rapporteur: Prof. Edosa Omoregie (Director, SANUMARC, Namibia)



Key Issues Discussed

Title of Presentation: *What Science and Capacity Building for Emerging Challenges in Food Security and Natural Resources management?*

Presenter: *Dr. Anne-Marie Izac (Chief Scientific Officer, Consortium of the CGIAR Centres).*

- » *Today's situation in term of agriculture production and natural resources management in Africa*
 - > *There has been a tremendous advances in agricultural research over the past 30 years*
 - + *Food production has increased three times in developing countries*
 - > *Poorest and most marginalised farmers continue not to benefit from these advances*
 - > *Negative impacts of certain production systems has emanated to certain areas of the world*
 - + *(example; polluted water, decreasing aquifers, soil degradation, etc.)*
 - > *Global food distribution, economic and financial crisis*
- » *Global food production and agricultural land*
 - > *Reduction in availability of farm land per person over the past 50 years*
- » *Long-term trends in food prices (1990 – 2011)*
 - > *Despite the advances made in agriculture, food prices has continued to increased due to demand and poor distribution*



Key Issues Discussed

- » *Future challenges to face food production by 2050*
 - > *By 2050, projected world population to reach 9 billion*
 - > *Food demand will more than double*
 - > *Water use expected to increase by 50%*
 - > *Climate change prediction to increase vulnerability of agricultural sector in most developing countries*



Challenges

- » *Globalisation of resources: This has resulted in the richer countries accessibility and exploitation of poorer country's natural resources. This has a result created to the underlisted problems globally.*
 - > *Land*
 - > *Water*
 - > *Biodiversity*
- » *Accelerated change (both natural and man-made) leading to most vulnerable countries and persons increasingly difficulties in food supplies and accessibility*
 - > *Climate*
 - > *Economic*
 - > *Population*
 - > *Political*
- » *Globalisation of challenges*
 - > *Food security*
 - > *Food sovereignty*
 - > *Climate change*
 - > *Degradation of ecosystem services*



Challenges

- » *More difficulties in maximizing productivity, water use efficiency and biodiversity*
- » *Unequal distribution of food between the developed countries and developing countries*
- » *Complexity of agriculture production and natural resources management.*
 - > *The inescapable interconnectedness of agriculture's different roles and function*





Opportunities

- » *Changes in scientific approach in solving identified problems (no general theory of agriculture). Problems becoming global and increasing opportunities for working together in solving similar problems.*
- » *Research challenge: increasing production, profitability and natural resources integrity, particularly for resource-poor farmers*
- » *Agriculture and science not sufficiently integrated. This has pose a huge challenge for scientists: new type of science needed and new way of conceiving role of research in society.*
- » *To create more productive and resilient agricultural systems to minimize negative impacts of climate change*
- » *More integrative approaches to agriculture*
- » *Partnerships between developed and developing countries rather the exploitation of the poor and vulnerable persons / countries*
- » *Learning from the past mistakes to challenge the problems of the future. Tapping into the experiences of new CGIAR Research Program on climate change, agriculture and food security.*
- » *Complex socio-economic-ecological problems and systems*
- » *Science-based results often largely ignored by policy makers, also not adopted by farmers. Farmers are used to old ways of doing things*
- » *Synergies between UNU-INRA and CGIAR*
 - > *Both institutions operates at local and regional scales, while focusing on global challenges*
 - > *Both institutions faces same challenges: how to balance efforts from local to global scale*



Implications for Science, Technology and Policy in Africa

- » *No general theory of agriculture,*
 - > *cannot explain different trajectories of agriculture sector in different countries*
 - > *cannot predict consequences of complex interventions (examples: bio-fuel, GMOs, green revolution, etc)*
- » *Implications of the challenges discussed in the paper raised the following keys questions*
 - > *Improving agricultural; productivity and profitability for small-scale, vulnerable producers in a sustainable manner*
 - > *Decreasing environmental footprint of agriculture and adapting to climate change*
 - > *How to increase productivity, profitability and environmental integrity and resilience in a sustainable manner for small-scale farmers in less well endowed areas.*
- » *The present scenario implications for science, technology and policy in Africa raised during the discussion session raised the inescapable interconnectedness of agriculture's different roles and functions:*
 - > *Complex multidimensional issues having specific roles for scientists, universities and research institutions in a collaborative manner which will then be simplified for the policy makers*
 - > *Scientists, universities and research institutions to be more proactive towards social, economic and environmental issues for the benefit of the mall-scale farmers in less well endowed areas*



Implications for Science, Technology and Policy in Africa

- » *Broader approach to spatial and temporal scales and ecosystem services focusing on small scale farmers (short-term), regional/landscape scale (medium term) and global scale (long-term)*
- » *The panel of discussants raised the new roles for African scientists which should shift focus from laboratory emphasis to solving practical field problems and improving livelihood of small scale producers. To achieve this, African scientists should strive to become negotiators, facilitators of knowledge exchange as well as being originators of new knowledge*
- » *Research institutions and universities should as a matter of urgency pull energy together in order to provide options at a multiple scale which can result in a larger impact both in terms of productivity and capacity building for Africa*
- » *Active participation of all stakeholders*



Key Messages for UNU-INRA

- » *Key messages presented by the presenter focussed on the following*
 - > *Food security and natural resources management challenges becoming global, rapid rate of change*
 - > *Complex socio-economic-ecological problems*
 - > *Research change: increasing production, profitability and natural resources integrity*
 - > *No single linear solution but ranges at multiple scales*
 - > *Agriculture and science not sufficiently integrated*
 - > *Huge challenge for scientists*
 - + *New type of science needed*
 - + *New way of conceiving role of research in the society*
- » *Specific roles for UNU-INRA*
 - > *UNU-INRA scientists should be more integrative, interdisciplinary and focused on systems (ecology, economic and social), understanding interactions and dynamic systems.*
 - > *UNU-INRA leading the way in recognising the issues required in meeting challenges in agriculture production and natural resources management*
 - + *different types of 'useful' knowledge*
 - + *Building capacities of stakeholders, partners and scientists to facilitate negotiation*





Key Messages for UNU-INRA

- » *UNU-INRA should network with a range of partners; from the local up to the global level*
- » *Lead the efforts in creating more productive and resilient agricultural systems; which should be more productive and based on stress resistant varieties for adapting to climate change*
- » *UNU-INRA as an institution to focus on new options for managing biological processes and natural resources more effectively under climate change*
- » *As a United Nations Institution, UNU-INRA to play more active role in facilitating new integrated options for policy makers.*
- » *UNU-INRA to go beyond participatory research to focusing on innovative systems for long term sustainability.*

