Land-related Issues Raised during the E-Conference "Toward Rio+10 and beyond: Assessing Progress and Next Steps for Land and Agriculture (5 to 23 March, 2001)

Introduction

The World Summit on Sustainable Development (Rio+10) (summer 2002, Johannesburg) regarding the environment, development and sustainability for the 21stC is in preparation. Fundamental to sustainable development is progress in sustainable agriculture, land management and rural livelihoods. As Task Managers (TM's), FAO and UNEP are responsible for reporting on progress in achieving the objectives of chapters 10, 12 and 14 of Agenda 21 on "Land and Agriculture" to the Commission on Sustainable Development 10 (CSD 10), covering:

Chapter 10 - "Integrated approach to the planning and management of land resources" (FAO)
Chapter 12 - "Managing fragile ecosystems: Combating Desertification and Drought" (UNEP)
Chapter 14 - "Promoting sustainable agriculture and rural development" (FAO)

In order to better reflect the diversity and range of opinions and conditions worldwide, the TM's organised an electronic conference to review the draft joint report to CSD-10 on "Land and Agriculture". This mechanism aimed to enhance participation and build towards other events in preparation for 2002, including:

- to solicit contributions to the joint report (Part II) for CSD-10;
- to solicit success stories on Agriculture and Land; and,
- to identify priorities for policy and action to achieve sustainability in agriculture and land following Rio+10.

It provided a forum to solicit multiple perspectives on Land and Sustainable Agriculture and Rural Development (SARD) from all individuals and institutions interested in the future of agriculture and land, drawing on Civil Society Organisations, Government, NGOs, the Private Sector and International Institutions, with a view to assess progress and stimulate further achievement of the goals of Chapters 10, 12, and 14.

At CSD-8, on the basis of papers from Major Groups and their participation in the debates of the Multi-stakeholder forum, as noted in the Chair's Summary Report, Specific Recommendations made by Major Groups, included, inter alia «Best practices in land resource management to achieve sustainable food cycles (Issue II)» (see summary of the Multi-stakeholder dialogue).

Land Issues were further raised in the Major Groups' Forum on SARD held at the 16th Session of the FAO Committee on Agriculture (COAG) (Rome, 29 March 2001). This one-day event allowed a continuation of the multi-stakeholder dialogue at CSD-8. Representatives of five of the nine Major Groups identified in Agenda 21 participated in the debate (Indigenous Peoples, NGOs, Workers and Trade Unions, Business and Industry, and Farmers) as well as representatives of Regional Focal Groups working with FAO and the Thematic Groups working towards the Committee on Food Security and the World Food Summit-five years later (WFS-fyl), and some Government Delegations attending COAG. The dialogue was structured around two general themes (1) Resources for sustainable agriculture and rural development (SARD) and (2) Enhancing partnerships for SARD. The outcome will contribute to the finalisation of the TMs report on "Land and Agriculture" for CSD 10 and in preparing for the WFS-fyl in 2001 and the Rio+10 Summit in 2002.

This synthesis presents the issues raised in regard to land during the E-Conference, the Discussion Board with representatives of major groups on the draft TM report, and the SARD forum dialogue.

Status of land resources and food, livelihood and environmental security

Food, land insecurity and infrastructure

Despite increases in food production, the developing world faces major food insecurity challenges linked to poverty, poor distribution of land and the pressures of globalisation that emphasise agro-exports away from basic food crops. Small farmers are bypassed by modern agricultural advances: more than 370 million poor people live in marginal environments for which modern science does not offer any viable option. Trends fuelled by biotechnology are enhancing monoculture and leading to a further industrialisation of agriculture (*Miguel Altieri, Professor of Agroecology, University of California, Berkeley).*

The population, poverty, environmental degradation cycle

Regarding the environment and sustainability question, from a Ugandan perspective, it is seen that poverty, population growth, natural resource depletion and environmental degradation are linked in a vicious cycle. Uganda, like many poor countries is struggling to overcome widespread poverty and destitution, including food shortages, unemployment, inadequate housing, stagnating or even falling standards of health and education, inadequate infrastructure, and escalating public indebtedness. The prevailing poverty and rapid population growth has resulted in land degradation, deforestation and subsequently in food insecurity. The demand for food is expected to triple over the next 30 years, and previous experience indicates that poverty and food shortages have a negative impact on economic, social and political stability. Although there is appropriate technology and people can be trained to grow vegetables and fruit using a minimum amount of water or even recycled water, people cannot always afford to buy this equipment and are obliged to focus on daily food needs (*Ayoki, Uganda Participatory Poverty Assessment Project,* and supporting document).

Implications of Global Climate Change

There is a need to address the issue of environmental considerations and the implications of global warming on agriculture, noting that a redesign of farming methods will be necessary throughout the world. Global warming is leading to changes in seasonal variations and the possible loss of better farming lands to submersion. Deforestation has led to loss of topsoil, increased salinisation in some water tables and contamination of water sources with distant impacts. The degradation of marginal areas due to overgrazing has contributed to the increase in desertification (*Ryan Curtis, GAIA - The Foundation for Sustainable Development, UK).*

Information, monitoring and assessment of land degradation

Assessment

There is a need to further ask What do we know? There are practically no developing countries with farm-level soil maps, and many of these countries do not have the necessary facilities for support services to the farmer; so the farmer is essentially left to him/herself. In this regard, we need to consider some basic questions: 1). Where in a country is the degraded land? 2). if degraded, what kind of degradation? 3) What kind of mitigation technology is most appropriate? A problem in developing countries is that there are too many models chasing too few data. if you do not know what you have, you will not know what you have to do. Therefore a plea is to make that effort to document the state of the land resources (*Hari Eswaran, World Soils Resources, USDA).*

Reference was made to the recent joint publication by IFPRI and the World Resources Institute (WRI) ***"Pilot Analysis of Global Ecosystems (PAGE): Agro-ecosystems"*** which includes exactly this kind of study. It is noted that the authors do point out the imperfections in the data, but note that their report is a starting point and that satellite data should be greatly improved in coming years as military restrictions on the precision of satellite images available to the public have been greatly reduced (see http://www.ifpri.org/pubs/books/page.htm) (Kristen *Sukalac, International Fertilizer Industry Association (IFA), focal point for International Agri-Food Network*).

However, it is further noted that this is a global effort and so of little use to the resource poor farmers. Satellite imagery can provide the farm level information. There is no institution in the developing part of the world that has the capability to access this information. In addition remote sensed data is land surface information. For this reason, when soil scientists make farm level maps, they do it the old fashioned way by auguring and digging pits. It is lamented that after the "fantastic effort" to produce the soil map of the world and the database for all the global projections that we are making now, "FAO slowly dismantled their staff and today there is only a skeleton staff left in the Land and Water Office." What we need today is an effort coordinated by an organisation such as FAO to build up the data base on land degradation and a farm level information base (*Eswaran*).

There is agreement that the developing countries do not have the factual data on the present state of their resources - including land - for appropriate measures to be suggested for implementation (*Upadhya*). Besides the shortage of data, what are available are poorly collected using methods that are inconsistent from one country to another. There is a need to focus on methods to assess change using good quality information, be it quantitative, qualitative, scientific or traditional. Examples of statistical problems in collection of indicators for multi-disciplinary impact and sustainability assessment for case studies at project level can be seen on the website of a European Community project "***Unification of Indicator Quality for Assessment of Impact of Multidisciplinary Systems***",

http://www.iacr.bbsrc.ac.uk/res/depts/statistics/uniquaims/tuniquaims.html for which the final report is forthcoming mid 2001. (*Janet Riley, Institute of Arable Crops Research (IACR) Rothamsted, UK)*

During 25 years, work has been ongoing in Spain on rural resources survey and land evaluation and the main results are included in the MicroLEIS***: Integrated System for Land Data transfer and Agro-ecological Land Evaluation.*** See Http://leu.irnase.csic.es. An interactive software with comprehensive documentation for anyone planning, researching or teaching the sustainable use and management of rural resources, with special reference to the soils from Mediterranean regions (based largely on information from the Andalucia region, southern Spain). This system provides a computer-based set of tools for an orderly arrangement and practical interpretation of land resources/agricultural management data. It includes a set of land evaluation tools (databases and models) able to be used for predicting land quality and degradation indicators, since degradation risks prediction, impacts on crop production and response strategies formulation are also considered in this system (*Diego De la Rosa, Land Evaluation Unit, Instituto de Recursos Naturales y Agrobiología de Sevilla, Spain*).

Reference is made to a recently published OECD report entitled**: *"Environmental Indicators for Agriculture, Volume 3: Methods and Results".*** This is the first international study to provide a comprehensive picture of the state and trends of environmental conditions in agriculture across OECD Member countries from the mid-1980s to the present day. Its conclusions are largely based on a set of indicators that use a common methodology to allow cross-country comparison of agri-environmental performance. The main report (over 400 pages with nearly 60 tables and 100 figures, also in French), is also available in summary form as an Executive Summary which can be downloaded free of charge from the OECD agri-environmental indicator website at: www.oecd.org/agr/env/indicators.htm (*Kevin Parris, Policies and Environment Division, Agriculture Directorate, OECD, Paris).*

Multifaceted approach and integrated solutions

Integrated solutions

An ancient and successful method of bio-intensive farming has recently been rediscovered. These practices were developed during the 'agricultural revolution' which occurred as early as 10,000 years ago. They permitted and supported the development of ever larger, more complex, and more successful human societies in all parts of our world. Amongst these ancient lessons for horticulture and animal husbandry are the following principles and practices: 1) the use of compost (humus) for soil fertility and nutrients; 2) a whole, interrelated farming system; 3) synergistic planting of crop combinations so plants which are grown together enhance each other; 4) deep soil preparation, which develops good soil structure; and 5) close plant spacing. However, 'sustainable bio-intensive' farming alone (or sustainable farming practice) is not the answer. The development of truly sustainable agricultural practices needs to include a collage of: 1) indigenous farming; 2) natural rainfall 'arid' farming; 3) no-till Fukuoka food raising, 4) bio-intensive mini-farming, 5) traditional Asian blue-green algal wet rice farming; and 6) agro-forestry. We must begin by educating ourselves, then sharing what we have learned by teaching people the importance of "growing" soil (*Brian Lewis, the Reed Programme).*

It was also suggested that SARD should begin with encouraging and serious implementation of programmes that promote organic farming, permaculture, agro-forestry, free-range non-intensive animal husbandry, renewable energy, appropriate technology, afforestation and perennial crops rather than annual ones. *(Curtis).*

Mobilising cutting edge science

Reference was made to the IFPRI/WRI report which states that 40% of agricultural land is seriously degraded, with the net result that crop productivity has been reduced by 13% overall, with the poor bearing a disproportionate burden, particularly in the poorest parts of Sub-Saharan Africa and Central America. http://www.cgiar.org/ifpri Agriculture is using up more land every year - 12.5 million hectares annually - a surface area the size of Greece or Nicaragua." The work ***"Feeding the World: A Challenge for the 21st Century"*** is recommended. It is suggested that the only hope is to mobilise cutting-edge science that is multidisciplinary, and bring it to bear on problems of tropical farming, which is mostly subsistence farming. Reference is made to the ***Future Harvest Centres of the CGIAR*** that are currently working on the "how" of improving such farming. It is also noted that land is not used only to produce food - agricultural lands also provide other goods and environmental services (e.g. habitat for threatened species) (*Sarwat Hussain, Secretariat of the Consultative Group on International Agricultural Research (CGIAR),Washington, DC*). He provides two cases:

Case 1: The ***"Rice-Wheat Consortium for the Indo-Gangetic Plains***" is a little-known success story http://www.cgiar.org/rwc). Rice-wheat rotations cover approximately 12 million hectares in South Asia, home to hundreds of millions of rural and urban poor. Slowing cereal yields, lack of new farmland, intense year-round cropping, and widespread resource degradation, are some of the major factors impeding the 'sustainability' of rice-wheat cropping systems. In fact, the areas covered by the Consortium constitute the most intensively cropped land in the world. Five Future Harvest Centres (CIMMYT, CIP, ICRISAT, IRRI, and IWMI) are working with national programs in Bangladesh, India, Nepal, and Pakistan, to promote new tillage practices (direct drilling and surface seeding) which allow farmers to prepare soils and sow wheat in a single operation after the rice harvest. The benefits: 75% fuel saved, higher yields, reduced application of herbicides, and 10% less water used. The fuel savings also translate into reduction of 1.3 million tons in emissions of CO_2. Next steps are to work with farmers on cutting down the burning of crop residues - an activity with the potential to reduce CO_2 emissions by another 17 million tons. What is clear is that the work is anchored at 4 different levels: community, national, regional, and international. It is necessarily multidisciplinary (combining an understanding of trends, low-tillage methods, nutrient management, system ecology, integrated water management, socio-economic and policy [issues], information and knowledge-sharing, and building capacity in terms of human and institutional resources). Most importantly, the innovative research fulfils the criteria of "global public goods," i.e. those technologies that depend on collective actions and provide shared benefits.

Case 2: Drought is one of the major abiotic stresses affecting agricultural productivity and livelihoods in dry areas. ICARDA, based in Aleppo, Syria, is focusing its research on developing a two-pronged strategy: (1) working on the genetic side, using conventional and non-conventional tools, to address production problems of crops grown in the dry areas (barley, wheat, fava beans, lentils, etc.) and (2) improving the management of natural resources. The benefit: powerful synergies inherent in each approach are captured. The work takes a holistic approach-new science, GIS, ecosystems approach, and participatory research methods - to address the needs of more than 1 billion people who inhabit dry areas, and where population growth rates are the highest in the world (3.6% per year).

Participatory processes and strengthening Civil Society

Through participatory approaches, the needs, aspirations and circumstances of smallholders must be considered such that innovations are: 1) input saving and cost reducing; 2) risk reducing; 3) expanding toward marginal-fragile lands; 4) congruent with peasant farming systems; and 5) nutrition, health and environment improving. There are special research challenges and demands for appropriate technologies that are: 1) based on indigenous knowledge or rationale; 2) economically viable, accessible and based on local resources; 3) environmentally sound, socially and culturally sensitive; 4) risk averse, adapted to farmer circumstances; 5) enhance total farm productivity and stability (*Altieri*).

There are many examples of farmer-led and NGO led agro-ecological initiatives that have resulted in enhanced food security and environmental conservation regeneration. Successful case studies where agro-ecological interventions resulted in enhanced food security and environmental conservation/ regeneration among small farmers throughout the developing world can be found on http://nature.berkeley.edu/~agroeco3 and www.kluweronline.com : a special issue of the Journal of Environment, Development and Sustainability, Volume 1 3/4 1999 (*Altieri*).

Insights are provided from the Reed Program which has worked towards the development of a culturally sensitive program for rural economic and environmental development. This program presents integrated solutions based catalyst of activities and programs for attacking both the systemic conditions of rural poverty, the needs for improved and increased food production, the requirements for empowering all peoples and programs for environmental protection and restoration. The Reed Program identifies, integrates and optimises the best tools, practices, and forms of organisation for successful and sustainable development. It strongly encourages the participation of villagers and support the formation of cooperatives and mutual associations. It is now planning the development of a four-hectare farm model in Vietnam using high-performance, sustainable technology and management practices. See http://www.reedprogram.com (*Brian Lewis, Founder, Rural Economic and Environmental Development for Environmentally Clean Communities, Illinois, US).*

It is surmised by one participant that historically since WW-II in addressing the "root cause" of the problems of soil degradation, erosion, and depletion, water contamination, loss and supply, international forces have tended to manipulate peoples and governments and precluded programs

that would have developed people's capacity to improve their lives and to encourage them to participate in the growth and development of their countries and of the world economy. The real question of human dignity and participation remains, for the most part, ignored and not addressed. The real participation of people must be achieved toward constructive solutions and to avoid conflict. (Lewis).

From work on land-use management in developing cities attention is focused on social and institutional aspects and participation of multiple actors of the development. Social, cultural and institutional issues are major points for the application of the technological and political solutions to problems. He provided the following example (*Alexandre Repetti, PhD student- land-use management in developing cities, Swiss Federal Institute of Technology Lausanne (EPFL*):

Case 3: The city of Thies, Senegal (population of 100'000) is experiencing a 4% growth rate per year and a subsequent large extension of the urbanised zone, upon the agricultural land and the rural villages. NGOs such as ENDA TW have been working there for some time and there is now a structured civil society, active in the city districts and in the villages next to the urban zone. Three years ago, the city administration contacted ENDA and the EPFL to help them solve their problems of resources management (land, water, soils) and to propose a new land-use plan. The plan was taken up in partnership between the City, the associations of the civil society and the nearby villages (about 40). After two years of negotiation the social, cultural and institutional conditions were favourable. Now they are experimenting with a participative land-use planning, integrated with resources management. The funding of the seminars, data acquisition, etc is from the city budget and the conditions are favourable to technical tools, based on GIS and information technologies. They are proposing an instrument panel, based on sustainability indicators for the following up of the development of the region, allowing top-down and the bottom-up communication. This is being used to establish the land-use planning of the region, integrated with resources management. http://www.enda.sn/ and Swiss development and cooperation http://194.230.65.134/dezaweb2/home.asp

Mobilizing resources for Sustainable Agriculture and Rural Development

Farmers representing a broad range of countries identified that the most important resource for SARD is the farmer, who as a producer and member of rural communities and civil society, needs training, infrastructural development, market opportunities and secure tenure (the latter citing successful examples from the Philippines).

NGOs provided a case study from Brazil demonstrating how the implementation of agro-ecological practices, including farmer participation, problem identification and selecting alternatives, led to improved yields through substituting chemical inputs with improved management of natural resources.

Enhancing partnerships for SARD

Indigenous Peoples stressed the cultural and spiritual relationships to the natural world, lands and subsistence foods and its vital role in the conservation of the biodiversity as well as collective ownership rights to lands territories and natural resources.

NGOs stressed that true partnerships among stakeholders for SARD require confronting major challenges such as access to land and require capacity of family farmers, indigenous peoples, rural women and other stakeholders to collaborate with governments, citing a Philippines project for building farmer capacity through extensive participatory training and community research.

Other CSO/NGO reactions highlighted, among others, the need for agrarian and land reform and the importance of water rights; the direct ties between climate change and sustainable agriculture, demonstrating that better practice has positive impacts on the environment and climate.

Policies

Most governments have introduced some legal, institutional and economic instruments to implement sustainable land use policies. Initially these instruments were in the form of top-down directive, restrictive measures mostly for the establishment and protection of nature reserves, the control of deforestation, overgrazing and land clearing, the protection of watersheds against erosion and flooding hazards and the control of human settlements. Land use codes and land zoning for each of these special purposes were developed to this effect, often in a non-coordinated manner and often with poor results. However, these instruments have increasingly incorporated collaborative mechanisms to bring together the full range of actors essential to the effective implementation of measures and have entailed both incentives, co-management mechanisms and new motivation for

stewardship as a result. *(Arthur Getz, WRI Associate, Biological Resources Program; SARD discussion board).*

In regard to globalisation and agriculture, there is a need to recognise that the loss of rural livelihoods is among the negative effects of globalisation and that to help build sustainable rural development, sustainable rural livelihoods have to be addressed. On sustainable management and natural resources management (NRM), it is suggested that reference be made to the degradation processes affecting Sub-Saharan Africa as well as the lost of prime agricultural lands due to urban sprawl. This provides a context of the delicate interaction of NRM, agriculture, industrialisation and urbanisation processes. (*Oliver Oliveros, Global Forum on Agricultural Research-GFAR; SARDDiscussion Board).*

Specific policy related comments on the Part II of the draft TM report:

- para. 10, sentence 2, to read "A number of countries elaborated policies and procedures of integrated land use planning and introduced changes in land administration and land tenure which have contributed to improvements in land resources conservation, management practices and food security (*Oliveros);*
- para. 25, last line: change to read "… agriculture: there are conflicting demands on water (addressed in another Task Manager's report), and unresolved cases of water rights violations through diversion projects, large dams and imposed development;…" *(Carol Kalafatic, International Indian Treaty Council, UN ECOSOC NGO since 1977);*
- para. 26, at national level to include, among others: "pushing for agrarian justice". (*Oliveros);*
- para. 26, section iii, first bullet point: change to read: "…as well as Habitat for Humanity International, and other stakeholders, should share their experiences and develop an international set of principles of sustainable land use planning and management which will serve as a basis to promote national action and international cooperation to improve land resources security" *(Kalafatic);*
- para. 27, at international level, to include "Review of the extent to which international legal instruments and mechanisms are being implemented" and "Providing assistance to countries to implement their commitments to these agreements". *(Oliveros)*
- Regarding the role of land policies, land tenure reform and land administration: Bravo and full support for having the courage to mention the lack of coordination and cooperation both among ministries but also between governments and stakeholders that too often impede progress towards sustainable agriculture. Need to address land degradation and the wide range of human activities that contribute to this problem. *(Kristen Sukalac, Agribusiness Major Group).*

It is noted that the policies originally followed to address poverty and environmental degradation have actually led to increased poverty and increased environmental degradation (*Lucio Munoz, independent researcher, Vancouver, Canada).*

There is a call for an operational definition of Sustainable Agriculture that gives priority to the urban and rural poor and emerges from grassroots and not from international organisations. Food must be produced where the poor are concentrated and with methods that are based on local resources, using both traditional and modern agro-ecological knowledge systems. Technologies for the poor must be developed in a participatory way, must be risk averting, cheap and accessible, adapted to marginal areas and health and environment enhancing *(Altieri).*

It is noted that the problems are daunting in scale, and multifaceted: economic, political, social, and environmental. There are also the intertwined issues of land reform, land tenure, property rights, land redistribution. What is abundantly clear is that public policy will be key to addressing the problems, and better science, better information, can be crucial inputs for effective action. The immediate challenge for Rio+10 is to keep food, agricultural, and natural resource management issues alive and high enough on the development totem pole, so that donors and governments alike can take notice and give rural issues the priority they deserve. One of the major thrusts of the CSD report should be, therefore, on long-term assessment of the problems, for which relevant studies and establishment of an international expert's panel could be considered (paras. 16(i) and 23(i) and (iii) of Part II) *(Hussain).*

In South Africa, it is noted that giving land to people is not always a solution to poverty alleviation but must be supported by allocation of development capital, extension service and training. In some cases, obtaining land was only the means to obtain income which they did not previously have. However, successes in other communities were ascribed to ownership of land, training, funds to

develop a market for their products e.g. where the people, especially the young, produced grapes, a high-income crop (*Gerrie Albertse, Agriculture Research Council, Stellenbosch, South Africa).*

From the E-conference discussions, it is suggested that even if the problems and constraints that have been highlighted are corrected, we may make some progress but perhaps not too great. In looking at the emphasis of all the UN efforts, we need to consider the human dimension (essential), economics, and policy changes to be made. However, no one wants to make an investment in the land resources - apart from brave words *(Eswaran).*