



Adaptation Planning and Strategies

FAO Contribution to

“The Nairobi Work Programme (NWP) on impacts, vulnerability and adaptation to climate change”

On invitation of SBSTA to submit to the secretariat, by 31 May 2007, information on the relevant programmes, activities and views on the issues listed under item 44 of the Conclusions of the Nairobi work programme on impacts, vulnerability and adaptation to climate change

Context and mandate of FAO to work on adaptation planning and strategies

One of the Governing Bodies of FAO, the Committee on Agriculture (COAG), has stressed the need for the Organization to continue to be a neutral and technical forum on the issue of Climate Change and to contribute to the debate, focusing on such issues as data, definitions and methodologies related to agriculture and climate change.

COAG supported the development of an integrated climate change programme based on current activities, within FAO Regular Budget provisions, and consistent with the legal and political framework of the UN Framework Convention on Climate Change (UNFCCC) and the technical work of the IPCC. This includes the promotion of practices for climate change mitigation, the adaptation of agricultural systems to climate change, the reduction of emissions from the agricultural sector as far as it is carefully considered within the major objective of ensuring food security, the development of practices aimed at increasing the resilience of agricultural production systems to the vagaries of weather and climate change, national and regional observing systems, as well as data and information collection and dissemination.

The Committee called on FAO to assist Members, in particular developing countries, which are vulnerable to climate change, to enhance their capacities to confront the negative impacts of climate variability and change on agriculture. In 1998, an Interdepartmental Working Group on Climate Change was established and mandated to coordinate FAO’s cross departmental, multi-disciplinary work on climate change.

The issues of climate change mitigation and adaptation has been specifically addressed and prioritized as a key area of future work by FAO’s governing bodies at the

Committee on Agriculture (COAG), the Committee on Food Security (CFS), the Committee on Forestry (COFO). In the context of FAO's internal reform 2006/2007, a new division "Environment, climate change and bioenergy" (NRC) was created reflecting the importance given to the subject.

Another SBSTA submission on "Methods and Tools" made by FAO outlines the set of tools and methodologies that FAO is able to deploy in support of climate change adaptation processes. The effective use of these information resources is contingent upon effective development facilitation. It is proposed that the country and region specific experience and capacity that FAO has acquired in the course of its rural development, extension and technology transfer activities could prove valuable in supporting climate change adaptation.

FAO submission to SBSTA

According to the outline provided by UNFCCC this submission reports on FAO programmes and activities relating to the sub-heading provided by SBSTA under the main topic "Adaptation Planning and Strategies" with the objective of contributing to the sub-themes:

- (i) "Collecting, analysing and disseminating information on past and current practical adaptation actions and measures, including adaptation projects, short- and long-term adaptation strategies, and local and indigenous knowledge", and
- (ii) "Facilitating communication and cooperation among and between Parties and relevant organizations, business, civil society, and decision makers, and other stakeholders".

Activities in this area can contribute to:

1. Exchange information on experiences, lessons learned, constraints and barriers of past and current adaptation measures and actions, and the implications for sustainable development;
2. Promote different ways and means for information sharing and for the enhancement of cooperation among Parties and relevant sectors, institutions and communities, including in the areas of disaster risk reduction and management;
3. Promote understanding of response strategies, including early warning systems and local coping strategies, and of lessons learned that can be applied elsewhere;
4. Assess ways and means to support adaptation, and address barriers and constraints to its implementation.

It should be noted that FAO recently initiated a process that will lead to the formulation of an Organization-wide climate change adaptation strategy and workplan. It

is anticipated that this strategy and workplan will provide greater clarity on how FAO intends to address the issue of climate change adaptation. This submission outlines the current extent of FAO's involvement in adaptation strategies and its evolving contribution to this need.

It might be useful to clarify some concepts and language such as:

1. Adaptation (in human systems) is a process of social learning using information on vulnerability, hazards and risks to make decisions in anticipation of climate change in the context of other planning concerns and faced with the 'deep uncertainty' about future climate, social, environmental and political conditions that will influence the outcome of adaptation planning. As a result adaptation strategies and actions should be robust against a wide variety of future conditions; rather than assuming we can predict future impacts and provide climate proofing measures.
2. The adaptation process recognises often competing stakeholder goals and processes and uses information at various levels and in many ways.
3. Adaptation is specific processes of stakeholder decision making, in specific contexts, related specifically to threats and opportunities generated by climate change. It is a generic solution that can be adopted from other contexts such as rural development or water security.
4. The aim is to integrate climate change and climate change adaptation in 'good enough' practice in risk management; rather than expecting decision makers to adopt new perspectives and analytical tools and to differentiate between decision making for current issues and longterm sustainable development.
5. Adaptation may lead to a reduction in future climate impacts—but this is not necessary, and it is not possible to predict those future reductions with certainty for most sectors and regions.
6. An essential element of adaptive capacity – the ability to undertake adaptive processes – is the use of climate and climate impact information:
 - Sound information on exposure to current climate conditions (from the use of climate as a resource to adverse impacts of extreme events);
 - Understanding of trends in present climate and range of future climates to be experienced at the relevant scale;
 - Understanding the exposure—the view of present and future climate from its influence on specific exposure units, whether plants, livelihoods or rural economies.

FAO is developing a conceptual map from vulnerability to adaptation, as well as the capacity to engage its key intermediate steps. Understanding this process is critical to

converting FAO's considerable data resources into adaptation strategy. Provisionally it seems the key steps in this process are:

- Defining a baseline (FAO data is crucial to this step);
- Defining the nature and location of vulnerability based on possible perturbations of the baseline (FAO tools are essential in this step);
- Identifying the options for adaptation and weighing up these options (FAOs credibility and extension experience is valuable to this step and understanding of "livelihoods" is crucial to this step);
- Communicating the option set and the relative merits and demerits of the options (FAO's extension is important to this step);
- Screening out "good enough" options – perhaps with the aid of decision support;
- Implementing the adaptation measure (FAO's traditional competency);
- Monitoring and evaluating the adaptation measure;
- Redefining the baseline.

Type of adaptation action¹	Title of adaptation action, including projects	Status of adaptation action - ongoing - under implementation - under development - under consideration	Needs in order to successfully implement the adaptation action	Concerns/ Barriers	Experiences/ Lesson learned	References i.e. publications, websites etc.
Scope of adaptation action <i>Regional level</i>						
Approaches/ strategies	Observing networks for terrestrial essential climatic variables (ECV), development of terrestrial framework and observational standards	Ongoing, global with international organizational participation (requested by the UNFCCC and endorsed by GEO).	National adoption of proposed standards.	Support for individual observing sites required. Capacity building of national staff to use the data.	harmonization, data compatibility and access are essential in developing the outputs required for climate change monitoring and prediction.	www.fao.org/gtos/topcFRAME.html www.fao.org/gtos/topcECV.html

¹ Please be aware of the degree of adaptation within activities:

- Some activities are undertaken specifically to adapt to climate change, e.g. increased water storage capacity, development of new crop varieties.
- Some activities include a component of climate change adaptation, e.g. infrastructure replacement incorporating higher flood standards
- Some activities, such as preserving biodiversity, restored wetlands, are carried out in order to provide protection against climate change (biodiversity protects the options available as food sources under altered climate scenarios and wetlands offer some protection against storm surges, for example).

Practices	Title as above	Ongoing: in situ and satellite observations being undertaken	Funds and national support to ensure complete observational coverage.	Data compatibility and data access for the development of regional and global data sets.	Need for common standards and protocols required to meet objectives. Full participation of national staff to ensure individual countries reap the benefits.	As above
Technologies	Title as above	Ongoing. Various depending on terrestrial ECV	As above	As above	As above	As above
Approaches/strategies	Global Land Cover Network (GLCN) harmonized land cover and environmental databases. At global, regional, national and local level.	On going at the regional and national level in Africa, Asia and South America.	Build the required capacity of national staff to generate and use data products for climate change activities including adaptation.	Access to in situ and satellite data. Coordination and use of comparable and harmonized methodology	Full methodologies and implementation activities developed.	www.glcn.org/news/
Practices	National and regional support networks for land cover mapping	Ongoing, many national	Adequate awareness and capacity	Funding and data access of over stakeholders after	As above	www.glcn.org/news/

	activities	networks and projects underway: e.g. Argentina, Libya, Morocco, Uruguay, etc.	building programmes for national government staff.	completion of activities.		
Technologies	Land Cover Classification System (LCCS), GeoVIS, database tools.	Ongoing, software and methodologies constantly being updated to meet the requirements of stakeholders.	Greater awareness of stakeholders on the need of common standards and compatible data sets.	Land cover, land cover change data and other environmental data is a key requirement of national and regional stakeholders to develop adequate monitoring, policy and activities related to climate change.	Tools and methodologies developed are a major asset for national institutions, similar methodologies now have to be developed to allow greater use of the data.	www.glcn.org/news/
Approaches/ strategies	Awareness raising and advocacy on implications of Climate Variability and Change to AG sectors	ongoing	policy advice			Publication on CC and Food Security
Practices	assessing policy options and instruments to promote (a) autonomous and (b) planned adaptation in AG sectors, including trade					

Technologies						
<i>National level</i>						
Approaches/strategies	Increased resilience of land management systems to withstand drought and strong winds as well as excessive rainfall and high temperatures.	On-going in some Latin American countries.	Knowledge.	Low knowledge base.	Promotion to build up a local knowledge base leads to exponential expansion	www.fao.org/ag/ca
Practices	Conservation agriculture and other soil, land and water conservation/management practices	On-going in some Latin American countries	Technical assistance	Training needs at technical level are high	Farmer to farmer training and technology development is important	Coping with water scarcity Watershed Management brochure http://www.rlc.fao.org/foro/forta/pdf/nueva.pdf
Technologies	No-tillage farming technologies	On-going in some Latin American countries	Availability of equipment	Access to equipment is limited in many regions	Private commercial sector has to be involved at an early stage	
Technologies	Other soil, land and water conservation/management technologies such as slope stabilization, river bank protection; terracing, water catchment management etc					
Approaches/strategies	Gender mainstreaming for CCA (in tools can ensure that gender-specific vulnerabilities	Under development.	Gender-disaggregated data. Empirical	Lack of gender-disaggregated data to understand differences in men's		Lambrou, Yianna & Piana, Grazia, 2005. Gender: The Missing Component in the Response to Climate Change. FAO. UNEP gender and environment website, climate

	and coping mechanisms (adaptive capacities) are taken into account in design of adaptation strategies. These tools include: gender analysis, gender impact assessment, gender budgeting, gender sensitive vulnerability assessment, promoting women in decision making.)		evidence demonstrating (a) the gender differences in climate impacts and adaptive capacities, and (b) the positive effects of using gender analysis on the choice of investment in adaptation projects. Inclusion of gender experts in policymaking. Awareness-raising/training on (a) gender dimension of climate change and (b) how to conduct gender mainstreaming.	and women's vulnerabilities and coping mechanisms. Participation: Incorporating women's knowledge into policies.		change page www.unep.org/gender_env/Environmental_Issues/Climate_Change/index.asp
Practices						
Technologies						
Approaches/strategies	Linking existing systems related to Climate change adaptation, Disaster risk Reduction, Natural Resource Management and development	Ongoing in some countries (BGD) Under development	Technical assistance & Policy advice	Uncoordinated sectoral mandates and inter-institutional competition	Donor policies and financial resource allocation practices hamper the	ftp.fao.org/docrep/fao/008/af967e/af967e00.pdf ftp.fao.org/docrep/fao/009/a0820e/a0820e.pdf www.fao.org/sd/dim_pe4/pe4_050201a1_en.htm The Role of Local Institutions in Reducing Vulnerability to Recurrent Natural Disasters ➤ Case Study Iran: ➤ Case Study Philippines

		in some countries			process of better integration	<ul style="list-style-type: none"> ➤ Case Study Mozambique ➤ Case study Viet Nam ➤ Case Study South Africa ➤ Case Study Honduras ➤ Consolidated report on case studies, workshop findings and recommendations
Practices	<p>Institutional and technical capacity building within line agencies to coordinate and integrate different perspectives;</p> <p>Facilitation of multi-stakeholder dialogue</p> <p>Communication strategy development</p>	<p>Ongoing in some countries (BGD)</p> <p>Under development in some countries</p>	Technical assistance &	<p>Sectoral/approaches and thinking hampers coordination; New paradigms for coordinated action are needed to efficiently address cross cutting issues such as CC.</p> <p>Availability of capacity building approaches and materials</p>	Starting within one sector is a beginning.	<ul style="list-style-type: none"> ➤ Bangladesh: Developing institutions and options for livelihood adaptation to climate variability and change in drought-prone areas (2006) ftp.fao.org/docrep/fao/009/a0820e/a0820e.pdf: ➤ Disaster Risk Management Systems Analysis: a guide for missions (in progress)
Technologies	<p>Integrated, action & contingency planning (starting from decentralized levels); technical workshops; testing/demonstration of risk reducing technologies (refer to Ag sector and NRM) which serve all of the three purposes</p>	<p>Ongoing in some countries (BGD)</p> <p>Under development in some countries</p>	Technical assistance &	<p>Integration of “bottom up” and “top down” planning paths; At which level to best integrate?</p>	At farmers level CCA DRM and NRM fall together, no distinction is made; this facilitates integrated work at local level;	<ul style="list-style-type: none"> ➤ Grenada: Assistance to Improve Local Agricultural Emergency Preparedness in Caribbean Countries Highly Prone to Hurricane Related Disasters (2007) in progress ➤ Hazard Risk Preparedness in Agriculture: Good Practice Examples from South and South East Asia (2007) in progress
Local (community) level						
Approaches/	Increased resilience of	On-going in	Knowledge.	Low knowledge base.	Promotion to	www.fao.org/ag/ca

strategies	land management systems to better withstand drought, untimely water supply, excessive rainfall, high temperatures, strong winds. (same as at national level)	pilot areas in African and Asian countries.			build up a local knowledge base leads to exponential expansion.	
Practices	Conservation agriculture.	On-going in pilot areas in African and Asian countries.	Technical assistance.	Training needs at technical level are high.	Farmer to farmer training and technology development is important.	
Technologies	No-tillage farming technologies.	On-going in pilot areas in African and Asian countries.	Availability of equipment.	Access to equipment is limited in many regions.	Private commercial sector has to be involved at an early stage.	
Approaches/ strategies	Mainstreaming gender into stakeholder analyses, livelihoods analyses and multi-criteria decision tools.	Under development.	Awareness-raising. Community-based involvement. Gender training of management planners, project developers.	Gender differences in access to information and technology. Gender differences in participation in decision making.		
Practices	Providing local climate					

	<p>information for decision making, targeting both men and women.</p> <p>Working with rural women's networks and groups. Using participatory methods to gather information, and working with them to disseminate information and strategies.</p>					
Technologies						
Approaches/strategies	<p>Improve and optimize tactical decision-making at farm level, based on the quantitative observation and analysis of local environmental factors.</p>	Under development.	Technical assistance.	Availability of equipment.	Analysis of climate variability at farming level is a prerequisite to assess the impact of climate change.	www.fao.org/nr/climpag/index_en.asp
Practices	<p>Determine current environmental conditions, especially to capture uppermost possible benefits from unusually favourable and/or non favourable climatic (rainfall, temperature, radiation, wind, etc.) conditions.</p>	Under development.	Technical assistance.	Availability of equipment.	Analysis of climate variability at farming level is a prerequisite to assess the impact of climate change.	

Technologies	Dynamic Farming Optimization (DFO).	Under development.	Technical assistance.	Availability of equipment.	Analysis of climate variability at farming level is a prerequisite to assess the impact of climate change	www.fao.org/nr/climpag/index_en.asp
Approaches/ strategies	Promoting community resilience against impacts of climate variability and change on productive sectors	On-going in pilot areas in Asian countries and Caribbean.	Technical assistance ; through TOT approach with national NGOs and /or extension -		Today's exposure to natural hazard risk is the entry point to address adaptation to longer-term climatic trends at community level	<ul style="list-style-type: none"> ➤ Grenada: Assistance to Improve Local Agricultural Emergency Preparedness in Caribbean Countries Highly Prone to Hurricane Related Disasters (2007) in progress ➤ Hazard Risk Preparedness in Agriculture: Good Practice Examples from South and South East Asia (2007) in progress ➤ Bangladesh: Developing institutions and options for livelihood adaptation to climate variability and change in drought-prone areas (2006) ftp.fao.org/docrep/fao/009/a0820e/a0820e.pdf: ➤ China: Pastoral risk management in Qinghai Province (2005) ftp.fao.org/docrep/fao/009/ag386e/ag386e00.pdf ➤ Mongolia: Managing Pastoral Risk - A plan of Action (2003) in progress
Practices	Climate risk Risk and vulnerability assesments & mapping	On-going in pilot areas in Asian countries and	Technical assistance ; through TOT approach with	CCA, DRR and even CBDRM approaches often do not address agricultural issues.	Highest impacts for rural people will be felt in	<ul style="list-style-type: none"> ➤ Bangladesh: Developing institutions and options for livelihood adaptation to climate variability and change in drought-prone areas (2006)

	Promoting Community based Disaster Risk Management approaches and livelihoods diversification	Caribbean.	national NGOs/exetnsion		AG sectors	<ul style="list-style-type: none"> ➤ Grenada: Assistance to Improve Local Agricultural Emergency Preparedness in Caribbean Countries Highly Prone to Hurricane Related Disasters (2007) in progress ➤ Hazard Risk Preparedness in Agriculture: Good Practice Examples from South and South East Asia (2007)
Technologies	<p>Improved local Early warning systems (climate and market related) and linked with national and Global EWS</p> <p>GIEWS; AGROMET; CLIMagrime GTOS etc</p> <p>Community level capacity building; community level action and contingency planning ; livelihoods diversification promotion;</p>	On-going in pilot areas in Asian countries and Caribbean.	Technical assistance ; through TOT approach with national NGOs and/or extension			<ul style="list-style-type: none"> ➤ Bangladesh: Developing institutions and options for livelihood adaptation to climate variability and change in drought-prone areas (2006) ➤ Grenada: Assistance to Improve Local Agricultural Emergency Preparedness in Caribbean Countries Highly Prone to Hurricane Related Disasters (2007) in progress ➤ Hazard Risk Preparedness in Agriculture: Good Practice Examples from South and South East Asia (2007)

<i>Sectoral level²</i>						
<i>Agriculture</i>						
Approaches/ strategies	Strengthen AG extension systems (in LDCs) to integrate & address CCA and DRR	On-going in pilot areas and in some cases at national level in all continents	Technical assistance	Focal points/units to address CCA are rare/absent at operational level and need to be institutional ized	Existing extension methods and tools are suitable to address CCA issues, if capacities are built. Most extension systems have the advantage that they link all levels and reach down to/have a capacity at local level.	
Practices	Institutional capacity assessment & restructuring Techncial capacity building of key extension staff	On-going in pilot areas and in some cases at national level in all continents	Technical assistance	Extension systems are often under-resourced and not well equipped	Farmers expect advice on CAA through extension and public communication means; there is no need to establish another, new organizational vehicle	
Technologies	Existing extension methods and tools	On-going in pilot	Technical assistance		Private sector could play a	

² The sectors below are given as examples. Please provide information on any other sectors which you consider important and have examples to share.

	such as FFS, Fairs, demonstration etc are suitable for capacity building in the context of CCA	areas and in some cases at national level in all continents			complementary role; Many agricultural technology options (e.g new crop varieties; CA; cropping systems etc) which are catalytic for this strategy , are available and suitable to promote awareness and scope for adaptation; new options are under development	
Approaches/ Strategies	Enhanced technological adaptation options in agriculture, forestry and fisheries	ongoing in many countries Under development in some countries	Knowledge . Technical assistance	financial resources lack of awareness about the emerging lack of exact knowledge how CC will modify weather/ ecosystems	start awareness creation on available options on the basis of applying no harm technologies and in the context of autonomous adaptation	

Practices	Promoting research, testing validation and introduction of adaptation options (including indigenous & new technologies)	ongoing in many countries Under development in some countries	Knowledge . Technical assistance	institutional barriers and capacity limitations to set up coherent systems which to coordinate and guide the whole process	“indigenous”/local technologies are under valued and under researched	
Technologies	Breeding/cropping systems. New crop varieties/species; livestock, fodder and grazing management; agro-forestry use of inputs	ongoing in many countries Under development in some countries	Knowledge . Technical assistance		Farmers are well placed to select adaptation options which suit them; it is risky to plan adaptation at a large scale at present to come due to limited know how on location specific impacts	
Approaches/ Strategies	Increase organic matter levels in soils for better soil structure, moisture retention, erosion stability and water infiltration.	Experiences at pilot areas and larger watershed level areas existing.	Knowledge .	Low knowledge base.	Promotion to build up a local knowledge base leads to exponential expansion..	www.fao.org/ag/ca
Practices	Conservation agriculture.	On-going in pilot	Technical assistance.	Training needs at	Farmer to farmer training and	

		areas and in some cases at national level in all continents		technical level are high.	technology development is important.	
Technologies	No-tillage farming technologies.	On-going in pilot areas and in some cases at national level in all continents.	Availability of equipment.	Access to equipment is limited in many regions.	Private commercial sector has to be involved at an early stage.	
Approaches/ Strategies	Development of cereals genotypes with good and stable productivity, and high quality potential for use in the food industry.	On-going at national level in Africa.	Technical assistance.	Availability of equipment.	Promotion of south-south collaboration.	
Practices	Development of guidelines of cereals germplasm improvement for increased productivity and quality.	On-going at national level in Africa.	Technical assistance.	Availability of equipment.	An important step to build-up south-south collaboration.	
Technologies	Vulnerability assessment of agricultural areas and crops to climate variability. Development of	On-going at national level in Africa.	Availability of local data.	Training needs at technical level	An important step to build-up south-south collaboration.	

	climate risk indices. Production of climate risk maps for agriculture.					
<i>Water resources</i>						
Approaches/ Strategies	Increase water infiltration capacity of soils for recharge of aquifers and reduction of runoff; increase water efficiency of cropping systems for reduced water consumption	Experiences at pilot areas and larger watershed level areas existing	Knowledge	Low knowledge base	Promotion to build up a local knowledge base leads to exponential expansion	www.fao.org/ag/ca
Practices	Conservation agriculture	On-going in pilot areas and in some cases at national level in all continents	Technical assistance	Training needs at technical level are high	Farmer to farmer training and technology development is important	
Technologies	No-tillage farming technologies	On-going in pilot areas and in some cases at national level in all continents	Availability of equipment	Access to equipment is limited in many regions	Private commercial sector has to be involved at an early stage	

Approaches/ Strategies	Watershed and sustainable Land management					
Practices						
Technologies						
<i>Health</i>						
Approaches/ Strategies	Reduce drudgery in agricultural work through labour saving technologies	Experiences at pilot areas and larger areas existing	Knowledge	Low knowledge base	Promotion to build up a local knowledge base leads to exponential expansion	www.fao.org/ag/ca
	Reduce dust and smoke emissions from agricultural lands	Experiences at pilot areas and larger areas existing	Knowledge	Low knowledge base	Promotion to build up a local knowledge base leads to exponential expansion	www.fao.org/ag/ca
Practices	Conservation agriculture	On-going in pilot areas and in some cases at national level in all continents	Technical assistance	Training needs at technical level are high	Farmer to farmer training and technology development is important	
Technologies	No-tillage farming technologies	On-going in pilot areas and in some cases at national level in all continents	Availability of equipment	Access to equipment is limited in many regions	Private commercial sector has to be involved at an early stage	

Approaches/ Strategies	GIS poverty mapping, with environmental, climatic and socioeconomic integration and analysis	On-going, projects mainly South America and Asia	Availability of data at the local level required	Availability of data, national capacity to interpret and use GIS applications		http://povertymap.net/
Practices						
Technologies						
<i>Coastal zones (settlements)</i>						
Approaches/ Strategies	GTOS Coastal activities (C-GTOS). coastal observing system and management and conservation of coastal areas	On going activity (pilots in Nile Delta and Mediterranean)	Knowledge and financial support.	Need for active participation of developing countries	Full international partnership in place to develop a coordinated response	www.fao.org/gtos/C-GTOS.html www.igospartners.org/Coastal.htm www.fao.org/gtos/tems/mod_coa.jsp
Practices						
Technologies						
<i>Others (please provide information about other relevant sectors)</i>						
Approaches/ Strategies	Forest sector					“Adaptation of forest ecosystems and the forest sector to climate change”. FAO Forests and Climate Change Working Paper 2. 2005. www.fao.org/forestry/site/climatechange/en
Practices						
Technologies						