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EARLY WARNING SYSTEMS

Report of the ad hoc panel

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Annexes

I. INTRODUCTION

1. By decision 14/COP.4, the UNCCD Conference of the Parties reappointed an ad hoc panel of 10 experts “to examine further the following:

(a) Critical analysis of the performance of early warning and monitoring and assessment systems, linking traditional knowledge and early warning systems, especially in the areas of the collection of data, dissemination of information and measuring for drought preparedness;

(b) Methods for and approaches to the prediction of drought and monitoring of desertification, particularly the method of analyzing vulnerability to drought and desertification, especially at the local, subnational and national levels, with special regard to new technological developments;

(c) Mechanisms to facilitate an exchange of information between scientific and technological institutions, in particular focusing on national and subregional networks on the prediction of drought and monitoring of desertification;

(d) More detailed measures for drought and desertification preparedness, in cooperation with the approaches, from hazard protection to risk management, adopted by the International Strategy for Disaster Reduction.”

2. By the same decision, the UNCCD secretariat was requested to make the necessary arrangements for the functioning of the ad hoc panel, including the provision of additional expertise, particularly in the area of participatory planning and legal advice.

3. The ad hoc panel was convened from 4 to 8 June 2001 at the Yamanashi Institute for Environmental Sciences in Fuji Yoshida City, Yamanashi Prefecture, Japan. The meeting was co-sponsored by the Government of Japan, in collaboration with the Yamanashi Prefecture. Annex I lists the ad hoc panel members who attended. The panel retained officers selected at the first panel meeting in Bonn, from 31 May to 3 June 2000:

Chair:	Dr. Kazuhiko Takeuchi (Japan)
Vice-Chair:	Mr. Abdellah Ghebalou (Algeria)
Vice-Chair and Secretary:	Dr. Anneke Trux (Germany)
Vice-Secretary:	Dr. Ali Umran Komuscu (Turkey)

4. In accordance with decision 14/COP.4, the secretariat invited additional experts, also listed in annex I, from relevant technical institutions with operational responsibilities in desertification and drought information systems. At the request of the Chair of the panel, additional experts were also invited.

5. The participants reviewed the background documents, including reports provided by Panel members and experts (annex II). Based on these documents, the participants engaged in a substantive discussion. The agenda for the meeting can be found in annex III.

6. The discussions responded to UNCCD Article 16, which states, “The Parties agree, according to their respective capabilities, to integrate and coordinate the collection, analysis and exchange of relevant short-term and long-term data and information to ensure systematic observation of land degradation in affected areas and to understand better and assess the processes and effects of drought and desertification. This would help to accomplish, *inter alia*, early warning and advance planning for periods of adverse climatic variations in a form suited for practical applications by users at all levels, including local populations.”

7. Recognizing the importance of building on existing operational early warning systems within the framework of national action programmes (NAPs) to combat desertification and drought, the participants reviewed and elaborated the four technical topics defined in decision 14/COP.4 and agreed to the conclusions covered in the following sections.

II. CRITICAL ANALYSIS OF THE PERFORMANCE OF EARLY WARNING AND MONITORING AND ASSESSMENT SYSTEMS, LINKING TRADITIONAL KNOWLEDGE AND EARLY WARNING SYSTEMS, ESPECIALLY IN THE AREAS OF THE COLLECTION OF DATA, DISSEMINATION OF INFORMATION AND MEASURING FOR DROUGHT PREPAREDNESS

Early warning systems (EWSs) for drought and food security have been operational for over 20 years; yet in some instances, famine still occurs and food security is not increasing. This is in spite of the fact that some systems have been improved so that they address not only famine but also food security. This may be an indication of some weaknesses in the current EWS information or institutional arrangements.

The panel noted several positive developments, including:

- Conceptual frameworks of EWSs;
- Improvements in data collection and analysis using remote sensing and Geographical Information System (GIS), in addition to conventional methods;
- Trained personnel.

However, major problems continue to retard the effectiveness of some of these systems, including:

- Weak institutional arrangements;
- Lack of trust/credibility among stakeholders;
- Poor communication networks;
- Lack of coordination among stakeholders;
- Untimely release of EW results;
- Use of information for political and economical reasons, or selfish ends;
- An unsupportive political environment.

Notwithstanding these problems, some successful systems exist. Even if successful, most EWSs stop at famine and do not provide protection from future famine incidents.

The participants saw the existing early warning and monitoring and assessment systems converging into a complementary framework in the future, thereby using the same institutional arrangements, similar datasets and indicators. This will improve their performance and cost-effectiveness. Thus, the conceptual and operational issues differentiating drought EWSs and desertification monitoring and assessments were revisited by the panel. The participants agreed that future effective performance and possibly combined operational frameworks may depend on the following:

1. Conceptually disentangling the complex relations between EWSs for drought and food security and monitoring and assessment of desertification

Early warning for drought prediction and assessment, and monitoring and assessment for desertification, are fundamentally interrelated yet operationally different activities. Parameters and methodologies applied for early warning of drought fall short of what would be required to realize a system for monitoring and assessment of desertification. Desertification is a phenomenon which is slow to develop. In this respect, the main areas requiring consideration, adjustment and inclusion are temporal scales and an enlargement of information on conditions.

There is a need to go beyond “state of the art” assessment and monitoring of desertification, to include vulnerability and risk assessment, using current and past data and information on the status of desertification. Such data would be derived from monitoring programmes for drought and desertification. Such a series of measurements are conducted with a view to providing a warning, should the trend become dramatic.

2. Vulnerability mapping and assessment

It was further agreed that the concept of vulnerability assessment should integrate biological, physical and socio-economic aspects, and management practices. A “system” for vulnerability assessment should not be reduced to a set of materials and data, but should be seen as an assemblage of:

- Methods (for obtaining data, analysing it, formatting, etc…);
- Practices (how things function in practice);
- Institutions and arrangements (rules and regulations for data collection, organizations undertaking data collection, analysis);
- Linkages between scientific institutions (data collection and analysis), decision-makers (action) and services (implementation),

combined in order to achieve an objective. Therefore, it was felt that vulnerability/risk mapping and assessments may be possible in the future. Comparison of the two systems is shown in table 1.

Table 1. Characteristics of early warning/monitoring systems for drought and famine and desertification

	Drought	**Desertification monitoring and assessment**
Objective	Operational warning of impending crises of drought and food security in order to propose immediate response	Forewarning of land degradation in order to have proof of land degradation process and to provide decision-making support for policy making
Time scale	Short term: seasonal	Long term: several years
Response	Immediate action	In practice: project/programme approach
Level	Small scale	Large scale
Information needed on	· Rainfall, aridity · Normalized Difference Vegetation Index (NDVI), vegetation cover · Population pressure	
	· Crops and livestock · Food supply and consumption · Marketing and prices	· Land information · Socio-economic issues · Human activities
Harmonization of indicators	More or less common understanding of indicators to be used among major systems	At present no agreeable set of common benchmarks and indicators

In light of the above comparison, participants agreed that both types of systems share similar databases and indicators. As previously recommended and adopted by COP 4, monitoring and assessment of desertification should build on existing EWSs. However, whether the difference between drought and desertification EW/monitoring in terms of time scale and land-related indicators would need technically and institutionally separate facilities will depend on specific national, subregional and regional situations.

3. Clearly defining the elements of a system for desertification monitoring and assessment

Desertification monitoring and assessment in its widest sense would include a framework encompassing an array of activities over a number of parameters; table 2 includes some important elements.

The concept implies fundamental research and data collection that can provide results only in the long term. The uniform collection of dataset parameters is not always possible because of differences in prevailing local or national situations. In order to meet countries' expectations of obtaining results within a short term, the following proposals were made:

- Separate scales and details of datasets for policy-making from those for validating results;
- With regard to the limited capacities in most countries, it was proposed that an up-scaling approach is mandatory and not optional; small-scale and large-scale assessment for representative vulnerable areas has to be combined. Details given at the local level are not always important at the international level. However, sufficient details are needed in order to identify vulnerable areas;
- The system must be flexible; some of the data might be dropped, in a case of lack of capacity;
- Use a framework for linkages and for identifying the reasons for collecting the minimum information required;

- Use national resources assessment databases available in most countries which will entail coping with the realities prevailing in those countries;
- "Quick and indicative" assessment methodologies should be considered as part of the system.

Table 2. Elements for implementing desertification EW/monitoring systems

Data analysis system	Understand historical, current and future responses to human and animal pressures, natural processes, landscape vulnerability
Data layers	Land resources Human resources Management practices
Analyse pressure	Decipher human and animal pressure Understand landscape response Understand degradation types
Indigenous knowledge and desertification assessment	Obtain feedback from local people on scientific results
Operation of the EWS	**Area approach** · A basin or watershed approach for biophysical resources in stream-dominated areas · An administrative area approach for socio-economic variables · An administrative area approach for all variables in arid areas without surface drainage · Ensure vertical and horizontal integration of institutions engaged in EWSs · Ensure vertical and horizontal integration of institutions working in EWSs · Improve coordination with national development efforts · Desertification assessment should promote local anti-desertification actions

4. Closely linking the work of ad hoc panels on EWSs and on benchmarks and indicators

The UNCCD stresses the importance of monitoring and evaluation in order to provide better feedback and lessons learned, and to give scientific advice on the process of implementation of action programmes. In this regard, the OSS/CILSS/GRULAC/China Working Group on monitoring with regard to supporting decision making within UNCCD implementation has made several proposals:

- Inventory and follow-up of ongoing activities;
- Monitoring of implementation processes, using the criteria established by the UNCCD (participation, partnership, coordination etc.) and as adopted by the COP;
- Monitoring of policies adopted within the NAP;
- Monitoring and assessment of desertification;
- Monitoring of impact of NAP.

The last two are closely interlinked; indicators for impact monitoring of NAPs are being developed and tested.

5. Developing close links between activities on early warning and monitoring and assessment with traditional knowledge

Scientific data often requires calibration and validation; crosschecking and identifying collaborative evidence; and filling gaps and identifying explanations

of scientific research results. These often need contextual interpretation based on traditional and local knowledge in order to be relevant and sound. Nevertheless, it should not be a one-way flow of information; partnership and sustainability require mechanisms for feedback to local-level decision makers, including local government, communities, and resource users/owners.

6. Conclusions

- Reviewing lessons learned from drought early warning systems, the participants recognized that early warning is a concept which has developed mainly in the context of natural hazards, especially drought, with a view to improving food security. However, significant conceptual and scientific advancements could be made in existing systems which might apply to desertification as well.

- Recognizing linkages between drought EWSs and desertification, information on land degradation is also valuable for poverty reduction strategies and food security analyses. The accumulation of information on drought is important for desertification monitoring.

- Recognizing the links between benchmarks and indicators and drought EWSs, ongoing discussions and the testing of a common list of indicators for impact monitoring in several regions begin with definition and testing of general desertification monitoring indicators.

- In order to develop realistic assessments of local situations and to ensure local ownership, early warning systems should connect local communities at risk with the technical structures of EWSs.

7. Recommendations

The panel made the following recommendations:

(a) Develop a common terminology in order to facilitate interaction;

(b) Facilitate access to, and enhance the transparency of, databases;

(c) Ensure that the systems are more demand driven and develop adequate subnational nodes;

(d) Focus on developing decision-making rather than just keeping up with technological advances;

(e) Build up real partnership in order to establish an enabling institutional and political environment;

(f) Improve drought early warning systems by integrating land degradation information;

(g) Build up desertification monitoring systems on existing drought early warning systems as much as possible;

(h) Encourage joint efforts between operational EWSs and organizations working on impact indicators;

(i) Work with community groups responsible for data collection, with particular regard to women's participation;

(j) Collect and analyze a variety of socio-economic data, disaggregated by gender where possible, and conducted with participatory tools such as field observations and individual interviews, among other participatory tools;

(k) Discuss and validate results and develop strategies with local communities, taking account of local cultural practices.

III. METHODS FOR AN APPROACHES TO THE PREDICTION OF DROUGHT AND MONITORING OF DESERTIFICATION, PARTICULARLY THE METHOD OF ANALYZING VULNERABILITY TO DROUGHT AND DESERTIFICATION, ESPECIALLY AT THE LOCAL, SUBNATIONAL AND NATIONAL LEVELS WITH SPECIAL REGARD TO NEW TECHNOLOGICAL DEVELOPMENTS

Discussions by the panel on this topic demonstrated that there are several methods being used for the prediction of drought which do not predict desertification. Clearly, there are also a number of approaches, influenced by various factors, and depending upon different situations, especially in the sourcing of data and analytical facilities available.

1. Data

To a large extent, both desertification monitoring and drought early warning require data from remote sensing and from field surveys. Field survey data can be used independently in their original form, or used for the validation of remotely sensed information. In addition, operational drought EWSs acquire and analyse the same field and remote sensing data required to monitor the extent and impacts of desertification.

The primary data used for desertification monitoring and drought early warning on a small scale are rainfall measurements and the remote sensing-derived Normalized Difference Vegetation Index (NDVI). Other remote sensing data sources are currently available, including data from new satellite systems in orbit. Such data, as well as data obtained from the field, can be used to demonstrate changes in vegetation cover and species composition.

Further, it was recognized that desertification monitoring requires the systematic tracking of land conditions, work not undertaken by most drought EWSs and which the older generation of satellites do not sufficiently cover.

2. Methods and approaches

(a) Remote sensing data and field data are currently used to analyse and map vulnerability to food insecurity and to desertification in the GIS environment.

(b) Remote sensing data are mostly dimensionless indices, which require ground-truthing and calibration to transform them into real units. Specifically, effective desertification monitoring requires quantifying vegetative conditions in their current status, as well as verification of previous vegetative conditions covering a period of more than 20 years; this requires reliable and accurate

records, or the use of local knowledge which can only be obtained from the residents.

(c) New developments in data analysis and integration frameworks are being carried out for both desertification assessment and monitoring and drought EW by various national and international organizations in different regions. Of particular significance, it was noted, are the prospects of using new analytical procedures to derive indicators on land conditions, soil erosion models and vegetation structure and conditions, using digital information from a series of historical sets of high-resolution satellite images which cover several years. Results can be validated using local knowledge and interpretation of the effects of previous policy regimes on agriculture or natural resources management. This can influence the formulation of new policies.

(d) GIS technology can be utilized in handling several layers of huge data sets during such an analysis. Further, GIS is mandatory for upscaling approaches and the integration of socio-economic data. There are, for example, possibilities for integrating remote sensing data analysis results with grazing statistics at the community level. This approach is new and provides better information extraction and analysis capability. Unfortunately, the cost may be prohibitive for many developing nations. Therefore, in spite of the high scientific value of the technique, it may be difficult to apply in most affected nations.

(e) Monitoring of desertification at different scales requires images of different resolutions. At the local level, high resolution images are necessary, while at national and regional levels these can be tracked using low resolution satellite information. Furthermore, the cost of these low resolution products may not be a constraint; yet they can influence decision making at local to national levels, especially with respect to drought EW. New and alternative technologies may provide better information, so long as these are cost effective.

(f) Traditional knowledge must be incorporated into the data analysis system, and more emphasis should be given to such knowledge, especially where data generation through high technology may be difficult; this will help to validate the information and to obtain feedback.

(g) Another strategy to enable the technological and cost-effective utilization of all sources of information is first to identify areas vulnerable to degradation by means of reconnaissance level studies using low-resolution images. Then the area should be rapidly ground truthed, followed by the use of recent high-resolution remotely-sensed data to detail vulnerable areas. It is necessary to test and use this kind of technology and data by integrating it with socio-economic data through GIS, and to analyse the results in order to draw conclusions. Since cost is normally a factor, it should be broken down into hardware, software and data components. These may be partly one-time costs, but the collection of field information may be high for most of the developing affected countries.

3. New technological developments

The newly-launched very high-resolution satellites may provide data at a much higher resolution and are therefore better placed for tracking desertification. However, this will correspondingly require more powerful computers to handle the increased volume of data. These systems are already providing more information on land conditions than was previously possible.

Plans were also noted to launch high spectral resolution satellite systems for capturing more information on parameters necessary for predictive modelling.

4. Conclusions

In conclusion the panel agreed that:

- Long term data series (such as NDVI) and matching of different remote sensing technologies have recently made available a number of new applications. They have added value to scientific and decision-making processes at a global level, as well as contributing to better understanding of global land degradation issues, and to linkages between land degradation, climate change and modelling.

- Proof of land degradation through remote sensing is often useful to decision makers, in order to target investments.

5. Recommendations

(a) Capitalize on the experience of operational drought early warning systems in using remote sensing to track indicators which are also used to assess desertification namely, rainfall, vegetation, and land use;

(b) Capitalize on remote sensing and geographic information system experiences in assessing desertification through a wide range of physical, biological, social, and economic indicators;

(c) Improve the understandability and accessibility of remote sensing products for decision-makers and end-users;

(d) Promote dialogue between scientists and decision-makers at strategic decision points, especially during the NAP process;

(e) Integrate local communities in monitoring and assessment programs;

(f) Integrate traditional knowledge into monitoring and assessment activities.

IV. MECHANISMS TO FACILITATE AN EXCHANGE OF INFORMATION BETWEEN SCIENTIFIC AND TECHNOLOGICAL INSTITUTIONS, IN PARTICULAR FOCUSING ON NATIONAL AND SUBREGIONAL NETWORKS ON THE PREDICTION OF DROUGHT AND MONITORING OF DESERTIFICATION

The regional thematic programme networks (TPNs) that have been developed under the UNCCD offer useful frameworks for promoting information exchange. In accordance with UNCCD regional annexes, Africa, Asia, Latin America and the Caribbean, the Northern Mediterranean and Eastern and Central Europe have been developing TPNs on specific topics. An overall review was presented to the panel on institutions offering mechanisms to facilitate the exchange of information between scientific and technological institutions, in particular focusing on national and subregional networks, for the prediction of drought and the monitoring of desertification. It was noted that the roles of such scientific and technological institutions under review are:

- data collection, accessibility, and integration
- evaluation and prediction of drought and desertification and measures for preparedness
- dissemination of information to end-users on the application of EWSs and desertification monitoring and assessment, and strengthening appropriate response mechanisms
- research institutions producing information
- research institutions monitoring basic processes

Analysis showed that there are some differences in the institutional arrangements from one region to another due to historical and environmental situations and differences in priorities set by those regions.

1. Conclusions

The panel observed that a number of the networks cited showed some characteristics or indications which encompassed some key factors for a successful network: set clear common goals; establish well-defined intermediate goals to ensure feelings of progress; and encourage strong leadership.

The panel noted that the following categories of actors need to be recognized as partners in the networks at every level of operation. These actors involved in networks include, among others:

(a) Non-governmental organizations (NGOs);

(b) Local communities;

(c) Grassroots organizations;

(d) Government technical agencies;

(e) Political decision makers;

(f) The private sector;

(g) Research institutions;

(h) Educational institutions;

(i) International organizations.

2. Recommendations

(a) Move from a project to a programme approach, first establishing frameworks in the context of national, subregional, and regional action programmes;

(b) Reinforce or establish communication mechanisms by promoting direct contact among individuals representing the relevant institutions, and by providing the proper technical means, such as data bases, meta-data bases, and e-mail lists;

(c) Facilitate free access to data and information, through negotiating frameworks, with definite rules for direct and innovative arrangements and with

guidelines developed by regional, subregional and national organizations and networks;

(d) Cultivate clear agreements on institutional networking and on responsibilities and leadership at the regional, subregional and national levels;

(e) Promote ownership by network members, for example through common publications, Web sites, and other communication mechanisms;

(f) Enhance capacities through technical assistance and training.

V. MORE DETAILED MEASURES FOR DROUGHT AND DESERTIFICATION PREPAREDNESS, IN COOPERATION WITH THE APPROACHES, FROM HAZARD PROTECTION TO RISK MANAGEMENT, ADOPTED BY THE INTERNATIONAL STRATEGY FOR DISASTER REDUCTION (ISDR)

The similarities of both the International Decade for Natural Disaster Reduction (IDNDR) and the UNCCD processes with regard to minimizing the impacts of natural disasters, particularly drought, were considered. This has created an opportunity to develop synergies and linkages between the UNCCD and ISDR (which succeeded IDNDR in 1999) in areas of drought and desertification. The main point to be noted is the ISDR's goal of moving from short-term disaster protection approaches to risk management strategies which focus on disaster prevention in the long-term, and which embrace sustainable development. It was also noted that the UNCCD promotes sustainable development and encourages the inclusion of NAPs in National Development Frameworks.

The purpose of the national action programmes is to identify the factors contributing to desertification and also the practical measures necessary to combat desertification and mitigate the effects of drought. Consequently, national action programmes constitute the fundamental framework for desertification preparedness.

The socio-economic and political impacts of drought have a long history in some drylands of the world. In recent years, it has been shown that the economic impact of drought can be very serious. It causes serious social disruption, reduced food and crop production, health problems, reduced hydropower generation, conflicts over resources and political insecurity. This is in spite of the fact that droughts are expected events, for example in arid and semi-arid regions in Africa.

To overcome some of these problems, especially in the use of information for planning purposes, participatory planning in EWSs was considered. This approach emphasizes the importance of involving the people at risk, the communication and exchange of information, methods of raising awareness, planning, and participatory monitoring and evaluation. In order to identify a realistic assessment of local situations and to ensure ownership of measures to be taken, EWSs should not be based entirely on scientific and technical information, but should include communities at risk as well.

1. Conclusions

- Existing and even improved EWSs in Africa have not necessarily led to effective drought mitigation
- Weaknesses in the EWSs include: (a) weakness in EWSs information dissemination and use, (b) institutional constraints including coordination problems, (c) logistical constraints leading to untimely responses, (d) political constraints and (e) the lack of inclusion of participatory planning approaches
- Few countries are systematically adopting drought risk management approaches instead of continuing with drought hazard protection
- The use of EWS data and information for long-term national development programmes and strategies intended to minimize or prevent drought and desertification hazards is not apparent. In other words, information on drought and desertification is not used adequately in national planning
- There are few examples of measures being undertaken for desertification preparedness, although examples relating to drought preparedness abound

2. Recommendations

Detailed definitions of, and measures for, desertification preparedness and for combating desertification must be part of the NAP process. Because the NAP process is a consultative process which includes all stakeholders, the guiding principles for such measures are:

(a) Create appropriate conditions for the participation of local resource users in the planning, implementation and evaluation of local action programmes;

(b) Create appropriate conditions for decentralization of decision-making in land management;

(c) Create appropriate mechanisms for funding at the local level;

(d) Assure communication and consultation among key stakeholders;

(e) Reinforce local capacities through training and the sharing of experiences;

(f) Negotiate partnership arrangements;

(g) Arrange appropriate NAP monitoring and evaluation mechanisms.

In accordance with these principles, the panel recommends that organizations carry out desertification assessment and monitoring in the context of desertification preparedness plans, especially through vulnerability and risk assessments which would estimate the possible magnitudes of problems within different scenarios. This approach should facilitate the preparation of suitable local interventions and action programmes to combat the problems.

Achieving this form of desertification preparedness depends on the following:

(a) Surveying existing information;

(b) Using scientifically sound information on desertification which integrates traditional knowledge;

(c) Establishing feedback mechanisms with local and grassroots organizations;

(d) Integrating cultural considerations into desertification countermeasures.

All countries host a range of institutions for national development. Appropriate synergies between these institutions and the principal actors involved in the NAP, especially local resource users, research and development institutions engaged in desertification activities, administrative offices and local representatives, could produce more effective responses to prepare for, and to combat desertification.

Annex 1

PARTICIPANTS AT THE AD HOC PANEL MEETING ON EARLY WARNING SYSTEMS

Members of the ad hoc panel

Ms. Nana Bolashvili	Georgia
Dr. Edmundo Garcia Moya	Mexico
Mr. Abdellah Ghebalou	Algeria
Dr. Ali Umran Komuscu	Turkey
Mr. Octavio Perez Pardo	Argentina
Dr. Valentin Sofroni	Moldova
Dr. Anneke Trux	Germany
Dr. Kazuhiko Takeuchi	Japan

Consultant

Mr. Ruben K. Sinange	Kenya

Experts of relevant institutions

Mr. Alhassane Adama Diallo	Centre Regional AGRHYMET, Niger
Dr. Patrick Gonzalez	U.S. Geological Survey, the United States of America
Dr. Patrick Hostert	University of Trier, Germany
Dr. Amal Kar	Central Arid Zone Research Institute, India
Mr. Haruo Miyata	Global Environment Forum, Japan
Dr. Tadakuni Miyazaki	Yamanashi Institute of Environmental Science, Japan
Ms. Hortense Palm	Organisation Internationale de Recherche et de Formation Technique, Mali
Dr. Masato Shinoda	Tokyo Metropolitan University, Japan

Annex II

DOCUMENTS SUBMITTED TO THE AD HOC PANEL ON EARLY WARNING SYSTEMS

Background documents

1. Decision 14/COP.4 (Early warning systems)

2. ICCD/COP(4)/CST/4 (Report of the ad hoc panel on early warning systems)

3. Document ICCD/COP(3)/CST/6 (Early Warning Systems: existing experiences of Early Warning Systems and specialized institutions operating in this field)

4. Towards an Early Warning System for Desertification. Dr. Amal Kar and Dr. Kazuhiko Takeuchi, The University of Tokyo, Tokyo, Japan.

5. Advances in Desertification Monitoring and Drought Early Warning. Dr. Patrick Gonzalez, U.S. Geological Survey, Washington, D.C., U.S.A.

6. Mechanisms to facilitate an exchange of information related to early warning systems between scientific and technological institutions, in particular focusing on national and subregional networks, for the prediction of drought and monitoring of desertification. Mr. Haruo Miyata, Global Environmental Forum, Tokyo, Japan.

7. Measures for drought and desertification preparedness, with particular reference to African countries. Mr. Ruben Sinange, Nairobi, Kenya.

Conference room documents

1. Remote Sensing Driven Early Warning Systems for Desertification and Land Degradation, Results and Conclusions from DeMon-II: An Integrated Approach to Assess and Monitor Desertification Processes in the Mediterranean Basin. Department of Remote Sensing, Faculty of Geography and Geosciences, University of Trier, Trier, Germany.

2. Proceedings of UNCCD Regional Meetings for Asia, Beijing, China, July 22-27, 1999: Asia-Africa Technical Workshop on Early Warning Systems held from 22-23 July, 1999.

3. La Planification Participative dans le Système d’Alerte Précoce. Ms. Hortense Palm, Bamako, Mali.

4. Système d’Alerte Précoce: Contribution du Centre Regional AGRHYMET. Mr. Alhassan Adama Diallo, Niamey, Niger.

Annex III

AD HOC PANEL MEETING ON EARLY WARNING SYSTEMS
Fuii-Yoshida City, Japan, 4-8 June 2001

Agenda

Location: Yamanashi Institute for Environmental Sciences, Fuji-Yoshida City, Yamanashi Prefecture, Japan

Monday, 4 June 2001

09.30 - 10.00	Registration
10.00 - 10.45	Opening session - Opening remarks by:
	Mr. Hidetoshi UKJTA, Director for the Global Environment Division, Ministry of Foreign Affairs, Japan
	Mr. Katsunori SUZUKI, Director for the Global Environmental Issues Division, Ministry of the Environment, Japan
	Mr. Kimihiko NAGANUMA, Deputy Director General, the Yamanashi Prefecture on behalf of Mr. Ken AMANO, Governor of the Yamanashi Prefecture
	Mr. Ahmed Cissoko, Senior Scientific Advisor, United Nations Convention to Combat Desertification
10.45 – 11.00	Coffee break
11.00 - 11.30	Opening remarks by Chairman of ad hoc panel
11.30 - 11.40	Remarks by the Representative of the UNCCD secretariat
11.40 - 12.30	Appointment of Topic Chairs and Rapporteurs
12.30 - 14.00	Lunch break
	Topic 1: Critical analysis of the performance of early warning and monitoring and assessment systems, linking traditional knowledge and early warning systems, especially in the areas of the collection of data, dissemination of information and measuring for drought preparedness.
14.00 - 15.00	Presentation of Topic 1
15.00 - 16.15	Discussion of Topic 1
16.15 - 16.30	Coffee break
16.30 - 17.30	Discussion of Topic 1

Tuesday, 5 June 2001

Topic 2: Methods for and approaches to the prediction of drought and monitoring of desertification, particularly the method of analyzing vulnerability to drought and desertification, especially at the local, subnational and national levels, with special regard to new technological developments.

09.00 - 10.00 Presentation of Topic 2
10.00 - 11.00 Discussion of Topic 2
11.00 - 11.15 Coffee break
11.15 - 12.30 Discussion of Topic 2

12.30 - 14.00 Lunch break

14.00 - 16.00 Working groups on Topics 1 and 2
16.00 - 16.15 Coffee break
16.15 - 17.30 Conclusion of Topics 1 and 2

Wednesday, 6 June 2001

Topic 3: Mechanisms to facilitate an exchange of information between scientific and technological institutions, in particular focusing on national and subregional networks on the prediction of drought and monitoring of desertification

09.00 - 10.45 Presentation of Topic 3
10.45 - 11.00 Coffee break
11.00 - 12.30 Discussion of Topic 3
12.30 - 14.00 Lunch break

Topic 4: More detailed measures for drought and desertification preparedness, in cooperation with the approaches, from hazard protection to risk management, adopted by the International Strategy for Disaster Reduction

14.00 - 16.00 Presentation of Topic 4
16.00 - 16.15 Coffee break
16.15 - 17.30 Discussion of Topic 4

Thursday, 7 June 2001

09.00 - 10.45 Working groups on Topics 3 and 4
10.45 - 11.00 Coffee break
11.00 - 12.30 Conclusion of Topics 3 and 4
12.30 - 14.00 Lunch break
14.00 - 16.00 Drafting
16.00 - 16.15 Coffee break
16.15 - 17.30 Drafting (continuation)

Friday, 8 June 2001

09.00 - 11.30 Drafting conclusion by Rapporteur of AHP/EWS
11.30 - 12.15 Adoption of the Report
12.15 - 12.30 Closing ceremony
12.30 - 14.00 Lunch break
14.00 - 17.30 Field visit (experimental sites on reforestation and biodiversity)

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