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Reshaping the operation of the Committee on Science and Technology in line with the 10-year strategic plan and framework to enhance the implementation of the Convention (2008–2018)
Preliminary outcome of the UNCCD 2nd Scientific Conference, "Economic assessment of desertification, sustainable land management and resilience of arid, semi-arid and dry sub-humid areas"

Preliminary outcome of the UNCCD 2nd Scientific Conference*

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1. The 10-year strategic plan and framework to enhance the implementation of the Convention (2008–2018) (The Strategy) contained in decision 3/COP.8 highlights the importance given to the development and implementation of scientifically-based and sound methods for monitoring and assessing desertification, and underlines the need for a holistic view.

2. At its eighth session, the Conference of the Parties (COP) decided to strengthen the scientific basis underpinning the Convention. To this end, by its decision 13/COP.8, Parties decided that each future ordinary session of the Committee on Science and Technology (CST) should be organized in a predominantly scientific and technical conference-style format by the CST Bureau in consultation with a lead institution/consortium that is qualified in and has expertise in the relevant thematic topic selected by the COP.

3. By its decision 16/COP.9, the COP decided that the thematic topic to be considered by the UNCCD 2nd Scientific Conference would be "Economic assessment of desertification, sustainable land management and resilience of arid, semi-arid and dry sub-humid areas".

4. In order to prepare for the Conference, two global working groups of scientists were convened to analyze and summarize the leading scientific knowledge on the priority theme

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in order to generate practical recommendations. Out of this came two white papers. White paper I is entitled “Economic and social impacts of desertification, land degradation and drought”; White Paper II is entitled “Costs and benefits of policies and practices addressing desertification, land degradation and drought”. Both papers aim: (i) to identify and assess the different types of costs relating to DLDD and elaborate methodologies on how to develop effective policies and strategies, including support with shaping action at the local level; (ii) to synthesize existing scientific knowledge to provide a basis for policy-oriented recommendations, and (iii) to ensure the flow of new knowledge to and from the UNCCD 2nd Scientific Conference. Also, a Background Document was produced. In addition to the two working groups, a Scientific Advisory Committee (SAC) as well as a Steering Committee were formed.

5. This document provides the preliminary synthesis and recommendations from the UNCCD 2nd Scientific Conference.

I. Background and rationale for enhanced science-policy-practice interaction on DLDD

6. There is a widespread consensus that the pressing issues of Desertification, Land Degradation and Drought (DLDD) are inadequately addressed in today’s political agenda at the global, regional and national levels. It is therefore of vital importance to raise awareness on the issues, not only on the negative impacts of DLDD in terms of socio-economic development, but also on the opportunities that they may create to help to guide current and future land management practices to be more sustainable and resilient. Understanding and evaluating the economic and social costs and benefits associated with DLDD is essential to developing cost-effective policies and strategies for addressing DLDD and in raising this awareness.

7. The evidence base on the economics of desertification, and of land degradation has expanded rapidly in the past 3 years. It needs to expand further in a systematic way.

8. Direct economic costs are incurred through reductions in income obtained by land users as a result of the lower productivity of land resulting from desertification. These 'on-site' costs are experienced either by the land user who degraded the land or another user who uses the site subsequently. However, estimates vary widely and are very inaccurate. Estimate variation and inaccuracy can be linked to the lack of reliable biophysical measurements of the extent and rate of change of desertification; the use of different economic estimation methods; the only recently expanded nature of economic research in this field; and isolation from estimates of the benefits of actions that cause degradation and are central to decision-making and its appraisal.

9. Indirect economic costs are incurred through off-site impacts that can be some distance from the land use that is the source of degradation, and so are generally externalized and suffered by people other than those who cause degradation. Estimates of indirect costs are less common than those for direct costs, and most indirect costs are still not estimated because of lack of data. The range and inaccuracy of estimates of indirect costs is explained in a similar way to those for direct costs, with the additional complications that valuation of non-market ecosystems services of soil and land are lacking for many of these impacts and impact profiles vary from country to country.

10. Social impacts, such as an increase in poverty, are important too, but their estimation is hindered by lack of social and biophysical data and by synergies between these impacts and the underlying social causes of desertification. Economic modeling shows how decisions by land users that lead to land degradation can be affected by government policies in unexpected ways. Improving estimates of the magnitudes of economic and social impacts

will require better measurements of the extent and rate of change of desertification, and the integration of desertification into national statistics and planning methods. While sustainable land management is an important measure for tackling desertification, research into entitlements, environmental justice and vulnerability suggests that tackling desertification is not just about adopting physical remedies, as social remedies are equally important. This means that economic impacts and social impacts need to be tackled in an integrated manner, rather than separately, if policies for addressing desertification are to be effective.

II. Action and implementation related requirements to guide science-policy efforts

11. The main topics of the conference, economic assessment of DLDD, resilience and sustainable land management, derive their rationale and relevance from the urgent needs for improvement at the field level. This said, the goal established at Rio+20 i.e. to improve scientific and technical knowledge on economic aspects of sustainable development, and therefore SLM, consequently means that the involvement of scientists is crucial.

12. The impacts of DLDD include food insecurity, poverty, unemployment and migration. Yet there are gaps in our understanding of the socio-economic impacts. The direct and indirect values of land, however, are vital for resilient societies and economic growth. In order to restore degraded land world wide, we need a clearer picture of available options and create a 'toolbox' for stakeholders and decision makers. We need to make smart investments yielding socio-environmental resilience.

13. Poverty eradication is the first and most fundamental Millennium Development Goal. DLDD causes food, water and energy scarcity, which are among the main drivers of poverty. Therefore land is the key and scientific knowledge is a tool to eradicate poverty. SLM is a focus of this tool. It has to be considered that poor, youth and women are social groups most affected by DDLD. We need a stronger focus on DLDD prevention (by SLM) rather than land rehabilitation.

14. The rural poor are statistically dominating "fragile lands" that are prone to land degradation. Countries with the largest shares of population on fragile lands have highest poverty rates. The rural poor have very few productive assets except land and unskilled labor. Asset-less poor have low ownership over resources, this can be attributed to small landholdings and permanent migration. New fragile land policy strategies should include the poor for payment for ecosystem services, improve access of the poor to resources, reduce high transaction costs, provide effective instructions, reduce high transportation costs, improve the poor's access to insurance and loan programs. Land degradation is a "poverty environmental trap" that will lead to higher vulnerability, declining land productivity, decrease in wealth and further degradation.

15. We are facing population growth mainly in less developed countries, which is strongly linked to migration into cities and poverty. Further problems arise since former self-sufficient communities are now dependent on others to survive, which led some governments taking advantage of the situation by redistributing land and thereby causing social tensions.

16. Economic productivity without degrading the nature is compulsory. Lessons on SLM in poor countries where some degradation took place in the past show some improvement with time. Deliberate efforts to invest in enhancing traditional and local institutions, government effectiveness, efforts to achieve zero land degradation and economic incentives. Thus SLM needs to be embedded in sustainable, productive and comprehensive strategies, so food security matters can be addressed in a sustainable way.

Action strategy needs to be developed without imposing pressure on natural resources. Actions need to consider the rights of the people directly involved in the management of land. Ecotourism is a possible action.

17. Education of the populations living in semi-arid, desert, and degraded land is an essential element in combating DLDD. If people do not understand what they are protecting and what they have to improve, there will be no sustainability. Society and stakeholders from government should promote education on causes of and measures against DLDD. Semi-arid areas and other environments vulnerable to desertification should be presented as a positive place in order to foster sustainable development within these regions. Re-education of family agriculture and sustainable practices will combat desertification. Education will also promote a sense of pride and land identity within these communities.

18. When human rights are not met, poverty is generated with environmental degradation as a consequence. Human rights efforts should be linked to efforts working to protect the environment. An integrated approach for multiple global socio-environmental benefits should be used. By assessing current vulnerability and the risk of future land degradation, we learn that local populations are in high need for sustainable and resilient strategies to mitigate DLDD and promote SLM. In order for a rehabilitation effort to be successful, the rehabilitation plan must be long term. Strategic approaches should use adaptive collaborative management principles for sustainable land management.

III. Recommendations for enhanced strategic and policy development

19. The elements that need to be considered for effective policies and strategies that guide the implementation of the UNCCD at the national, regional and global levels include policies and strategies for land, forest, water and other natural resources management, developed as part of an overall national policy framework to improve land management and promote sustainable development. These policies must be based on the best available science and knowledge relevant to the local, national and regional conditions and circumstances. Thus, it is important that there is greater investment in scientific research on DLDD in order to better develop and formulate effective policies. In addition, attention needs to be paid to the science policy interface and the structures and processes through which scientific knowledge reaches policy makers. The Conference welcomed further scientific investigation into the prospective development and potential of the Zero Net Land Degradation approach (ZNLD), which appears to be a promising and underpinning strategic approach.

20. It is crucial to understand the institutional settings in which land users make decisions that may lead to, or avoid, desertification. . The rate of desertification could be reduced if: government policies were evaluated beforehand to check for unintended consequences; societal institutions were audited to check for constraints that lead to poor people degrading land instead of managing it sustainably; and an integrated approach was taken to national land-use planning and government policies.

21. We cannot look at land degradation just as an environmental problem. We have to understand and assess policies for reducing land degradation. It will be less costly to prevent land degradation than to deal with its consequences. We need better evidence for better policies. Efforts to enhance food security need to reach out well beyond the confines of individual sectors, instead the efforts need to be combined into a more complex system. Rural development should not only increase resilience in economic, but also reduce social and environmental risks. Better evidence is needed to improve knowledge. Better knowledge is needed for informed debates, informed policy making, and informed

planning. Developmental and environmental policies need to minimize risks, reduce exposure to hazards and reduce vulnerability by improving coping and adaptive capacities, building resilience, and fostering growth.

22. Even with the understanding of what makes people vulnerable to DLDD, there is a discontinuity between policy and practice. Farmers are not passive victims, they adapt to DLDD when they notice a change in their land productivity. Adaptions include migration of both labor and livestock, diversification of livelihood activities, crops, and livestock breeds, and land based adaptations. Local people are helping themselves and are not solely dependent on policy. Policy needs to address educational and social aspects of land degradation and has to work across scales. Rio+20 recommended to invest in people, which also means in education systems.

23. Drylands are complex social-ecological systems, characterized by non-linearity of causation, complex feedback loops within and between the many different social, ecological, and economic entities, and potential of regime shifts to alternative stable states as a result of thresholds. As such, dryland management faces a high level of uncertainty and unpredictability.

24. A critical means to achieve sustainable dryland and drought risk management is to strengthen resilience through capacity development of individuals, communities, and systems to survive, adapt, and follow a positive trajectory in the face of external and/or internal changes, even catastrophic incidents, and rebound strengthened and more resourceful while retaining essentially the same functions.

25. New policy strategies for fragile land should include the poor for compensation for ecosystem services, improve access of the poor to resources, reduce high transaction costs, provide effective instructions, reduce high transportation costs, improve the poor's access to insurance and loan programs. Local people are helping themselves and are not solely dependent on policy; action can be achieved by a bottom up approach.

26. The UNCCD National Action Programme (NAP) process should facilitate affected Parties to present their strategies for DLDD prevention and mitigation and outline future action. At the global level more resources are required to enable affected Parties, especially developing countries, to implement their obligations under the UNCCD. Regional cooperation is an important component for successful implementation and coordination mechanisms must respond to existing and emerging needs, capacities and the specific issues of each region. At the national and local levels decision makers should also have responsibility to ensure participation and provide full ownership to local and primary affected communities, while mobilizing access to resources from relevant institutions and organizations.

27. The approach to implement national policies and strategies to combat DLDD should include a legal system that provides for the effective management of land, taking an ecosystem-based approach. At the international level the UNCCD has many gaps and limitations for the protection and sustainable use of land and it lacks key elements to provide the effective ways to protect and manage the ecological aspects of land. The proposal for an international instrument for global land and soil degradation, which has received significant attention recently by the UNCCD, is regarded as essential as part of the national, regional and international framework to combat DLDD.

28. Due to continuing land degradation, loss in biodiversity and changes in climatic patterns, harnessing synergy between the three Rio Conventions (UNCCD, UNFCCC and CBD) is vital when working on terrestrial ecosystems. The development of synergistic approaches together with the creation of an enabling policy and institutional environment is important for the strengthening of the Rio Conventions. In general, options for building synergies among the Rio Conventions in specific cross-cutting areas includes capacity-

building, technology transfer, research and monitoring, information exchange and outreach, reporting and financial resources. Developing and practicing synergies among the Rio Conventions in a fully operationalized manner requires (i) improving interactions at regional, national and local levels; (ii) reducing potential conflicts between independent activities; (iii) reducing duplication of efforts through improved knowledge transfer; and (iv) sharing financial resources in a more efficient and balanced way. Promoting synergies at regional, national and local levels requires also stronger collaboration among the National Focal Points (NFPs) that serve each of the Convention and play a key role in bridging the differences between involved parties especially at the policy level.

IV. Recommendations related to scientific tools, methodologies, findings and outreach

29. Based on a comprehensive literature review of recent peer-reviewed scientific journals complemented with grey literature, the White Papers and the Background Document provide an introduction to current thinking about economic valuation and techniques related to different aspects of dryland management and policy-making. The papers highlight the challenges that exist, the different opinions about the best way to address environmental economic valuations, and the many assumptions that need to be clearly identified for each exercise in order to communicate the results efficiently to decision-makers at all levels. The Conference took ample note of the papers, discussed and welcomed their main conclusions and findings.

30. There is a wide consensus that research plays an essential role in the combating DLDD. Moreover scientific activities greatly increase a country's adaptive capacity and resilience to climate change. This leads to the call that research should be extended to all parts and regions of the world. To strengthen the scientific foundation for sustainable dryland and drought risk management, there is a need for a system approach based on transdisciplinarity with emphasis on participatory research and involvement of practitioners as well as scholars from different scientific disciplines to address problems in an integrated manner. Science has to contribute to an integrated management of land. Economics should have a stronger role in desertification and land preservation. Scientific integration is needed as is a realistic picture of combined socio-economic-environ-mental aspects.

31. Another critical means is the application of an ecosystem services approach to ensure proper attention to the dynamic and interlinked provisioning, regulating, supporting, and cultural dryland ecosystem services. The ecosystem services approach has proven particularly useful and challenging for economic valuation of sustainable dryland and drought risk management as a basic tool for direct management purposes as well as policy decision-making.

32. Analytical frameworks, methodologies and tools are available for the identification and measurement of the costs of DLDD, including a methodology for prioritizing across geographic areas based on an assessment of the costs of investing in effective prevention and mitigation of land degradation compared to the costs of the loss in ecosystem services (i.e. the cost of action versus inaction). A thorough assessment needs to identify important changes to ecosystem services and ecosystem service delivery. Application of the Total Economic Value (TEV) framework may assist in the identification of different types of economic values associated with the range of ecosystem services that are affected by DLDD, including values associated with direct use (fuelwood, animal fodder) or indirect use (soil fertility) option values based on maintaining resources for future use or existence values (linked to the utility people derive from knowing certain species, habitats, landscapes continue to exist).

33. The application of the TEV framework, economic valuation of changes to ecosystem services and the integration of these values into social cost benefit analysis provide decision makers with a sounder basis for making land use decisions relative to simply looking at the direct costs of DLDD. Moreover, cost-benefit analysis should include the identification of how the costs associated with DLDD and the benefits of sustainable land management are distributed across stakeholders, focusing on those groups with a greater reliance on ecosystems and poor and vulnerable households. Distributional analysis can inform decisions around land use to ensure policies and land management practices selected are both equitable and efficient from the perspective of society. If there are trade-offs to be made, as often is the case, decision makers will have information available to help them to prioritize objectives in a transparent manner.

34. The new World Atlas of Desertification (WAD) contributes to economic valuation of land degradation. The need for a new baseline assessment of land degradation and desertification (LDD) and its causal issues has risen. As an initiative of the UNCCD, in partnership of the UNEP and collaborations with a network of experts, a more holistic and global approach was chosen to create the new WAD. The new WAD illustrates the local dynamics at time. It aims at documenting environmental and anthropogenic issues and changes (i.e. drought, population or land productivity dynamics) and bringing them into relation to their impact on LDD. A platform for including most recent findings and interactivity (indicator definitions) is provided through the WAD website.

35. Generally science should provide the best knowledge but subsequently it has to be adapted to local needs in order for the implementation to be successful. We need to move efforts in developing methods and indicators for desertification, specifically at the local level. Environmental poverty, specifically induced by desertification, can be targeted through the implementation of the pentagon method.

36. Scientific approaches have to consider more the indirect values of land because they contribute to a resilient society and to economic growth. Therefore a tool-kit of available options for restoring degraded land should provide to stakeholders and decision makers. We need a nexus perspective across sectors to address food security, energy security, water security, and land quality is underpinning all of these aspects. Inaction to combat DLDD is more costly than action. Land degradation is a consequence of market failures and partly a consequence of poverty. Land users must receive direct benefits for adopting sustainable land management practices. The strategy of ELD assessment is to build and inform policy debate, improve open collaboration and communication, and to increase awareness and commitment.

37. Understanding and evaluating economic and social costs and benefits associated with DLDD is essential to developing cost effective mitigations. The significant indirect economic costs resulting from DLDD fail to deter the driving forces of degradation or lead to a change in behavior. Social impacts of DLDD include increased poverty, migration, and environmental injustice, vulnerability, area conflicts, and government instability. Economic and social consequences of DLDD need to be targeted in an integrated method.

38. A sense of caution was to be noted regarding the nexus between economic valuation techniques for land resources and the inclusion of large-scale global private sector investments in so-called marginal and/or drylands. Such investments have to be ecologically and socially just and sound and the global research community is called upon to reflect thereon.

39. Scientific research needs to invest in analyzing drivers of change in cropland areas in order to provide a good basis for innovative agriculture to be developed. Studies so far have shown that cropland expansion is lower in more remote areas and land intensification

is enhanced by marked access, whereas land tenure security adversely affects cropland expansion.

40. Transformative land regeneration requires to understand first what are the drivers of land crisis; and second identifying grassroots solutions to build resilience. Moving to a climate-smart agriculture and building more productive and growth resilient farming systems at various scales, empowering women, improving food security and nutrition are important contributions.

41. The Conference proposed that researchers, their organizations and the relevant authorities are to be called upon to promote inclusion of the Conference's theme into appropriate funding instruments for research and decision-support, e.g. the Horizon 2020 programme of the European Commission.

42. Bringing science to bear on the DLDD issues through the mechanism of conferencing is not sufficient. The conference of scientific community encouraged UNCCD to facilitate the establishment of a multi-disciplinary "Platform on land and soil degradation, desertification and sustainable land management (PLASDD)" that would enhance the scientific discourse on a more permanent basis and thereby strengthen the evidence base of UNCCD policy deliberations. It would integrate strong socio-economic and ecological expertise, and would adhere to scientific principles, including peer review.

NOTE: An Annex with a full record of brief session summaries will be submitted by 15 April 2013.