

# Meeting of Coordinators of the Project on Capacity-Building through Partnership and Information and Communication Technology for Using Indigenous Knowledge for Nature Conservation and Natural Disaster Management in Africa

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## Meeting Report





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**Organized by the United Nations Environment Programme, Nairobi, Kenya  
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## **I. Introduction**

1. Over the course of history, local communities have developed lifestyles and cultures that are intricately tied to nature. The species-diverse environments in which they commonly live are deeply embedded in their productive activities and spiritual values. For example, natural resource management by these communities is often associated with ancestral attachment to and management of large lands and resources; collective rights in the use and management of resources; traditional decision-making institutions, benefit-sharing and leadership structures; traditional ecological knowledge; and subsistence economies that are largely self-sufficient and rely on resource diversity rather than monoculture.
2. In Africa specifically, local communities had well-developed traditional indigenous knowledge for environmental management and coping strategies, and were more resilient to environmental change. This indigenous knowledge had, and still has, a high degree of acceptability amongst the majority of populations where communities have lived with the knowledge. The communities can easily be identified with this knowledge and it facilitates their understanding of certain modern scientific concepts for environmental management including disaster prevention, preparedness, response and mitigation.
3. Solutions offered by disaster mitigation efforts based on sound scientific and technological parameters may fail because they do not fit within the local traditional wisdom. A technical know-how adapted to indigenous wise practices can magnify protective measures. Traditional knowledge about natural hazards, especially among older people, enables some communities at risk to capitalize on technology in achieving self-protection. Community groups in hazard-prone areas have generated a vast body of indigenous disaster prevention knowledge. That knowledge is the sum of facts that are known or learned from experience or acquired through study and handed down from generation to generation.
4. For example, people have learned from experience that the locations most susceptible to natural disasters are those close to the edge of water; on unstable slopes, in flood plains of rivers; in, or adjacent to, an active fault zone; on soft or unstable soil and on the flanks of an active volcano.
5. The main value of indigenous knowledge is its use in helping local people to cope with day to day challenges, detecting early warning systems of change and knowing how to respond to challenges including knowing which plants to conserve and protect, which medicine to use, where to find food or water in times of crisis and which plants and animals are best avoided. It is also a life-raft that keeps affected communities afloat before external aid arrives. Hence, a blend of approaches and methods from science and technology and from traditional knowledge opens avenues towards better disaster prevention, preparedness, response and mitigation.
6. The United Nations Environment Programme (UNEP) fully recognizes the role of indigenous knowledge in the conservation of natural resources and management of

natural disasters that have severe consequences on the environmental resources. For that reason, UNEP developed the concept of strengthening capacities of stakeholders in the application and use of indigenous knowledge in natural conservation and natural disaster management almost two years ago. On the basis of that concept, a project proposal was developed and resources for its implementation mobilized.

7. The present meeting was convened in the context of commencing the implementation of that project in Kenya, South Africa, Swaziland and the United Republic of Tanzania. It was hoped that the experience and lessons learned from those pilot countries could be emulated and replicated in other countries in the region that were facing similar challenges. The meeting provided an opportunity to foster dialogue among project coordinators and other experts, and to deliberate on the way forward for the successful implementation of project activities and for achieving the expected accomplishments.
8. The meeting was held on 3 and 4 November 2004 in Nairobi, Kenya. It was attended by project coordinators from Kenya, South Africa, Swaziland and the United Republic of Tanzania, Government representatives and experts from the four countries, a representative from the Russian Association of Indigenous Peoples of the North, Siberia and Far East (RAIPON) and UNEP representatives. A detailed list of participants is contained in annex II to the present report.

## **II. Deliberations of the meeting**

### **A. Opening ceremony**

9. The opening ceremony was chaired by Mr. James Kamara, Acting Chief, Disaster Management Branch, UNEP Division of Environmental Policy Implementation.
10. The meeting was officially opened by Ms. Elizabeth Mrema, Officer-in-Charge, Division of Environmental Policy Implementation and Acting Chief, Implementation of Environmental Law Branch and Task Manager, Partnership for the Development of Environmental Laws and Institutions in Africa (PADELIA).
11. Ms. Mrema made an opening statement on behalf of Mr. Svein Tveitdal, Director, Division of Environmental Policy Implementation and Division of Environmental Conventions.
12. She underlined the important role that communities continued to play in natural resource management, emphasizing their well-developed traditional environmental management and coping strategies and increased resilience to environmental change. There was, therefore, a high degree of acceptance of indigenous knowledge among the majority of populations where communities had lived with such knowledge. In particular, communities were familiar with the disaster agents which stemmed from natural hazards and with their early warning signs. She noted that every society had its own way of determining the manner in which to act and react in relation to hazards. It was important, therefore, that the value of indigenous knowledge and coping strategies in disaster risk

reduction were well understood and acknowledged more directly and more often in order for their application and use to be linked to sustainable development.

13. Furthermore, indigenous knowledge was a precious natural resource that could facilitate the process of disaster prevention, preparedness and response in cost effective, participatory and sustainable ways. She alluded to the recognition of indigenous knowledge by the New Partnership for Africa's Development (NEPAD), which had approved the Africa Regional Strategy for Disaster Risk Reduction prepared under its auspices. The strategy noted that most national disaster risk reduction plans neither focused on strengthening traditional coping strategies nor did they emphasize preservation of local and traditional knowledge and experiences that underlie those survival mechanisms. It further observed that communities tackled disasters at the local level, often using traditional coping mechanisms based on local knowledge and experience. Local community experience provided the basis for people to improve their knowledge and adopt more effective disaster risk reduction approaches.
14. More importantly, the strategy recommended that efforts to enhance disaster risk reduction should incorporate interventions that strengthened the role of traditional authorities, knowledge, experience and coping strategies. It further stated that it was necessary for disaster risk interventions to be informed by local survival strategies so as to promote more risk-neutral or risk-reducing strategies. That constituted an important milestone in the recognition of the important role of indigenous knowledge in environmental conservation and disaster management in Africa. She underscored UNEP's recognition of that role and stressed the need for strengthening capacities of stakeholders in the application and use of indigenous knowledge in nature conservation and natural disaster management in the region.
15. She also emphasized that participants had a significant role to play in the deliberations of the present meeting in providing guidance on the way forward for the successful implementation of the project. In particular, the project coordinators were expected to provide guidance and leadership during the implementation of the project and were required to supervise collection and analysis of data on indigenous knowledge and prepare and review comprehensive reports, organize national workshops for stakeholders and prepare periodic reports on the basis of the project implementation plans.
16. In conclusion, she recognized the presence of other experts and stakeholders who had been invited specifically so that they might enrich the discussions and help in mapping out the best way for project activities to be implemented in the respective countries. She thanked all the participants for taking time to come to the meeting and for agreeing to participate in the project.

**B. Organization of the meeting and consideration of the agenda and work programme**

17. The meeting was organized to focus on three main areas of importance to the implementation of the project in the four countries:

- (a) Goal and overview of the project to stress the importance of application and use of indigenous knowledge in nature conservation and disaster management and to identify the various international agendas (such as the United Nations 1992 Earth Summit, Agenda 21, 1999 World Conference on Science, Johannesburg Plan of Implementation, Millennium Development Goals, the NEPAD Strategy and the UNEP programme of work) which have recognized the role of indigenous knowledge in sustainable development, particularly in developing countries and in countries with economies in transition;
- (b) Status of the application and use of indigenous knowledge in natural resource conservation and natural disaster management in the project countries;
- (c) Indicative project implementation plans and data collection and analysis.

- 18. Discussions at the meeting focused on interactive dialogue among participants on the various presentations made.
- 19. Mr. James Kamara, Acting Chief, Disaster Management Branch of UNEP, invited the participants to introduce themselves. The agenda and work programme were adopted and are set out in annex I to the present report.

### **C. Goal and overview of the project**

- 20. Mr. Kamara outlined the goal and overview of the project. He explained that in many parts of Africa, indigenous knowledge was considered to be primitive, outdated and inefficient. It was also being weakened and eroded and young people were increasingly unwilling to acquire, use and blend indigenous knowledge with contemporary knowledge. As a result, it had not been harnessed to fit into the current scientific framework for environmental conservation and natural disaster management. Furthermore, it was vested in the older generation of informal leaders who may not hold official positions and there was a general lack of information on the role of indigenous knowledge in environmental conservation and natural disaster management. There was growing recognition in international agendas, however, of the importance of indigenous knowledge. He cited, in particular, the 1992 United Nations Earth Summit, Agenda 21, the 1999 World Conference on Science held in Budapest, the Johannesburg Plan of Implementation, the Millennium Development Goals, the NEPAD Strategy and UNEP programme of work, as important international agendas that had recognized the role of indigenous knowledge in sustainable development.
- 21. The goal of the project was to strengthen the capacities of principal stakeholders in the application and use of indigenous knowledge in environmental conservation and management of natural disasters through training and access to and exchange of information. The focus of the project was to:
  - (a) Provide a forum through training workshops that would bring together stakeholders to build consensus on actions for application and use of indigenous

knowledge systems in environmental conservation and natural disaster management;

- (b) Provide publications as tools for the application and use of indigenous knowledge in environmental conservation and natural disaster management; and
  - (c) Develop web sites and share indigenous knowledge information obtained from specific communities.
22. He highlighted that the main target audience for the project were Governments and decision makers, environmental and disaster management practitioners, academic and research institutions, indigenous people and communities, the international community, UNEP and the United Nations system wide, the media and other stakeholders. The project outcomes were, therefore, expected to have a wide range of recipients and users.
23. During the brief discussion that followed the presentation, it was emphasized that traditional knowledge systems were still intact in some communities in the four project countries. Some participants indicated that there were cultural differences which made the collection of information on indigenous knowledge difficult in a number of the countries. Participants agreed that similar approaches should be used in the implementation of the project but it was stressed that each country should use expert groups in the implementation of project activities at the country level.

**D. Presentations on the status of the application and use of indigenous knowledge in natural resource conservation and natural disaster management in the project countries**

**1. Kenya**

24. Under this agenda item, Mr. Laban Ogallo, Coordinator, Intergovernmental Authority on Development (IGAD) IGAD Climate Prediction and Application Centre (ICPAC), Mr. A. B. C. Ocholla Ayayo, Professor of Anthropology in Population Studies, University of Nairobi, and Mr. William Nyakwada, Kenya Meteorological Department, gave presentations highlighting:
- (a) Vision of ICPAC which was to optimize the application of climate information and prediction products to save lives and reduce climate and weather related risks to food security, water resources, health and other major sectors for poverty reduction and sustainable development in the greater horn of Africa, and new strategic planning for addressing the challenges of climate in support of sustainable development;
  - (b) Role of traditional foretelling of the future (forecasting) and early warning;
  - (c) Acquisition and use of indigenous knowledge over long period observations through traditional socialization processes of norms and beliefs, skills and knowledge imparting to the younger members of the society to enable them to become functional adults; and
  - (d) Strategy for implementation of the project in Kenya.

25. Mr. Ogallo gave a presentation in which he introduced the vision and strategic planning of ICPAC and the role of indigenous knowledge. He emphasized that traditional practices were still common in many parts of Africa and their incorporation into new sustainable development goals remained a challenge. ICPAC had identified as a priority the application of good traditional practices in environmental management, monitoring prediction and early warning. He expressed his gratitude for the inclusion of ICPAC in UNEP's initiative as coordinator of the project in Kenya.
26. In his presentation, Mr. Ayayo highlighted the role of indigenous knowledge in natural resource conservation and hydrological disaster management and cited a number of examples where application and use of such knowledge was still prevalent, namely:
- (a) Fish resources conservation including traditional indigenous knowledge of fish breeding periods and places, behaviour of fish-eagles enabling fishermen to know the movements of schools of tilapia and other types of fish, types of winds and their direction allowing fishermen to determine whether fish had changed their direction and the depths of water in which they could be found, the behaviour of different kinds of fish requiring different fishing gear, in order that fish nutrients could be maintained during all seasons;
  - (b) Land use conservation: shifting cultivation was a traditional practice in which land was never overused nor cultivated repeatedly, season after season and year after year; but was left to rest and plant cover was restored to enable it to accumulate vegetable manure. The practice of mixed crop cultivation enabled leguminous crops to restore nitrogen in the soil for other food plants. Knowledge of when to expect long and short rain seasons allowed farmers to plan which crop was suited to a particular season and traditional indigenous knowledge terminologies of types of soil and their reaction to water facilitated the planting of appropriate for each type of soil;
  - (c) Biodiversity conservation: knowledge that local birds socialized in local trees and bushes and that once those trees and bushes were cleared, the birds would migrate leaving the local community without ecological indicators of the natural environment;
  - (d) Disaster management:
    - (i) Wind patterns: traditional indigenous knowledge of storm routes and wind patterns enabled people to design their disaster management practices in advance by constructing appropriate shelters, wind break structures, walls, and homestead fences. Preparedness for hydrological disasters was crucial, including traditional indigenous common sense, understanding of wind patterns and their level and intensity, which enabled people to plan their daily economic and social activities with foresight;
    - (ii) Cloud and rain patterns: knowledge of local rain corridors made it possible for people to prepare for storms; knowledge of the cloud colour that might carry hailstones enabled people to take cover; knowledge of thunderclaps, thunderstorm clouds and winds taught them to expect storm and lightening; knowledge that prolonged drought was followed by storm, thunder and lightening during the first few rains enabled them to prepare for and expect a disaster; knowledge that changes in birds' cries or the onset of their mating period were indicators of seasonal change;

knowledge of positions of the local clouds enabled the community to assess changes in cloud movement and take appropriate action;

- (iii) Animal behaviour: observing the migration of a large swarm of butterflies, for example, was a sign of a pending army worm infestation and famine which meant that people should begin planting potatoes and cassava, as a precaution since those were dry season crops; observing bees migrating in large swarms was an indication of a pending dry season requiring livestock herders to migrate to high or low ground in search of grass and water; animal behaviours were indicators of climatic change, weather change, pending storm, droughts, or seasonal change; and knowledge of snake behaviour when they were thirsty enabled elders to assess the extent of droughts; their presence also reduced the problems of rat infestation.

- 27. In his presentation, Mr. Nyakwada explained the strategy that Kenya would use in the implementation of the project. He indicated that a project steering committee made up of indigenous knowledge experts had already been established and an expert meeting would be organized in Kisumu to plan and develop a road map, select national consultants and address all the issues relating to project implementation. From past experiences, he illustrated that there were high and low potential areas in terms of quality and availability of information, which needed to be taken into account in the collection of data on indigenous knowledge. He informed participants that the project in Kenya would be implemented in Western Kenya where recurrences of floods and drought were prevalent; Eastern Kenya where arid and semi-arid conditions were prevalent; and coastal Kenya where coastal and marine environments were dominant.
- 28. During the ensuing discussion, participants emphasized that the older generations were the main custodians of indigenous knowledge and lamented the fact that death remained an important factor in the loss of such information. They called, therefore, for the rapid acquisition of knowledge from the older generation in order to prevent its loss. In addition, participants emphasized that site selection for primary data collection should take into account potential high and low yield areas to ensure success in collecting data. Participants also identified communication gaps as a significant problem in collecting indigenous knowledge information from communities and noted that the main factors requiring due attention, therefore, were: gaining the trust of the local community and individual respondents, common language, common knowledge and being accepted as part of the community.

## **2. South Africa**

- 29. Mr. Krisno Nimpuno, Director, Office of the Disaster Preparedness in Africa (ODPA) and Mr. Conrad Ignatius Steenkamp, Director, Transboundary Protected Areas Research Initiative, World Conservation Union (IUCN) and Carnegie Mellow University, gave presentations emphasizing the need for a bottom-up development approach to traditional communities and interlinkages between indigenous knowledge systems and disaster risk management and the need for interlinkages between researchers, institutions and local communities.

30. In his presentation, Mr. Nimpuno explained that people's behaviour in environmental conservation and natural disaster management was changing constantly. Specifically, natural disaster management covered a wide range of issues including social, economic, cultural, legal, health, environment and development, which influenced changes in behaviour. He emphasized that linkages between traditional environmental management and culture were essential in changing behaviour in traditional communities. In addition, knowledge of indigenous approaches to environmental conservation and natural disaster management was vested in the older generation of informal leaders and the top-down management approach was less suitable than the bottom-up approach in conducting surveys on indigenous knowledge.
31. In highlighting the issue of data collection, he stressed that in view of the communication gaps between stakeholders, structured questionnaires should be avoided. More importantly, a social and anthropological approach of data collection and analysis should be adopted. Data collection teams should be established and collaborating community members trained on how to conduct surveys. He described the various studies that had been carried out in the selected project area, namely, the Limpopo region, underscoring that materials from the studies would serve as an important source of relevant information for the project. The project would also involve schools because school children and indigenous communication systems (drummers, praise singers, drama, cultural institutions, etc.) were the best communicators and could serve as important and acceptable conveyors of information to and from a community. In closing, he enumerated some of the activities that would be undertaken during the project implementation.
32. Mr. Steenkamp also emphasized the need for a bottom-up approach in the collection of data (such as on land management, climate variability, vulnerabilities and livelihoods). He explained that there were various mechanisms for indigenous knowledge information communication, such as community web sites created by local school children, and that local communities should be trained to maintain those web sites. He stressed the need for researchers and institutions to create clear linkages with local communities and schools in order to promote access to and exchange of indigenous knowledge information. This was very important in creating better understanding of the role of indigenous knowledge and how it could be integrated into scientific knowledge for environmental conservation and sustainable development.
33. Discussion on the presentations identified the need for clear understanding of the interlinkages between the application and use of indigenous knowledge and cultural and spiritual values (e.g. superstition, witchcraft, beliefs in ancestors, common knowledge, taboos and totems). Cultural values permeated communities. Participants stressed that in addition to the positive aspects of the application and use of indigenous knowledge, there was an absolute need for identification and categorization of the negative aspects to promote better understanding of the impacts on environmental resources and how they led to increased vulnerability. Furthermore, participants expressed the need for systematic mapping of indigenous knowledge systems accumulated over time to enhance the creation of indigenous knowledge nodes in specific institutions in remote areas.

### 3. Swaziland

34. In his presentation on behalf of Mr. Oluwole O. G. Amusan, Director, Swaziland Institute for Research in Traditional Medicine, Medicinal and Indigenous Food Plants, University of Swaziland, Mr. Isaac Dladla of the Swaziland Environment Authority, highlighted some statistics and figures about Swaziland, underscoring, in particular, that 81.4 per cent of the population lived in rural areas and 81.4 per cent of the entire population of the country had access to safe drinking water.
35. He highlighted the use of indigenous knowledge in natural resource conservation and hydrological disaster management and cited indicative examples where the application and use of such knowledge was still prevalent, namely:
- (a) Soil management: shifting cultivation (lucabe) as well as intercropping, agroforestry and establishment of grass strips to promote preservation of soil; traditional use of wood ash for soil fertility maintenance; traditional names for describing soil fertility, for example, sidzakeni for fertile soil and esihlabatsini for sandy soil;
  - (b) Biodiversity conservation: agroforestry encouraged conservation of soil, trees and wildlife which promoted biodiversity; establishment of grass strips promoted biodiversity; traditional harvesting of wood barks ensured that the cambium layer of trees was not damaged; revered species were protected by names given to them, for example, *Zizyphus macronata* (umlahbantfu), used only for funerals and never to be found in homes; taboos were associated with plants to protect their abuse for household needs; *Helichrysum odoratissimum* (imphepho) was burnt to purify air as air an freshener;
  - (c) Wildlife management: stories of humility and friendliness of some wildlife as a way of protecting weak animals from extinction included, for example, that the chameleon (lunwabu) was a messenger of peace from God that should not be harmed; timing of traditional hunting (July and August) ensured that newborns were not killed as most wildlife gave birth in and after October; totems for clans based on certain animals were a means of protecting wildlife and domestic animals, for example, Dube clan: the zebra, Mayantsi clan: the buffalo; Dlamini clan: the black sheep, Mvubu clan: the hippopotamus, Ngwenya clan: the crocodile;
  - (d) Livestock production: use of some plants for fertility and control of parasites; traditional preservation of milk in calabashes for fermentation as emasi; traditional preservation of meat as biltong; sun drying of meat as umncweba; use of pawpaw leaves as a meat tenderizer and burning of leaves of certain plants for cattle to inhale as treatment for some diseases;
  - (e) Food storage: preservation of vegetables in dried form (infuso); storage of sweet potatoes in pits as ingungu; storage of maize in dry powdered form;
  - (f) Drought and flood disaster management: Prediction of floods from the heights of nests of emahlokohloko birds near rivers; use of moth numbers for drought prediction; position of the sun and the cry of a specific bird (phezukwemkono) on trees next to rivers to predict the onset of the rainy season for farming; position of moon crescent to predict rain; presence of certain plant species as an indication of a low water table, for example, *Ascolepis capensis* (umuzi).

36. He said that indigenous knowledge was most commonly used in traditional medicine which played a major role in the health care delivery system in the country with about 85 per cent of the population relying on traditional medicine for their health needs. The Swaziland Institute for Research in Traditional Medicine, Medicinal and Indigenous Food Plants was actively engaged in research in medicinal and indigenous food plants at the Mafutseni farm.
37. In conclusion, he explained the project implementation strategy in Swaziland, which would comprise a core team of researchers with experience in various disciplines, a pre-project workshop to identify stakeholders and the selection of those with strong cultural backgrounds and lifestyles.
38. Following the presentation, participants recognized the need to clarify terminologies by developing an appropriate checklist of common indigenous knowledge terminologies used in the environmental resources conservation and natural disasters management in the four project countries (for example, names of trees, plants, birds, insects, animals, clouds and wind movements, etc.) used in traditional predictions for rain, floods, landslides, drought, earthquakes, volcanic eruptions, fishing seasons, planting and harvesting seasons. Participants also stressed that elements of indigenous knowledge systems and practices could be integrated into development processes for environmental conservation and natural disaster management.

#### **4. United Republic of Tanzania**

39. Mr. Mohamed S. Mhita, Director General, Tanzania Meteorological Agency, informed the meeting that the United Republic of Tanzania had not formulated specific policy and laws dealing with indigenous knowledge systems. Existing national sectoral policies and plans such as the Tanzania Development Vision 2025, the Agriculture and Livestock Policy, the Tanzania Environment Policy, the Poverty Eradication Strategy and the Fisheries Policy had significant components of indigenous knowledge systems. He described international instruments which had been adopted by the United Republic of Tanzania but had not been internalized to the extent of mainstreaming indigenous knowledge systems, and highlighted various institutions involved in research on indigenous knowledge systems, for example the Institute of Traditional Medicine based at the Muhimbili University College of Health Sciences, the Tanzania Meteorological Agency and the National Environment Council.
40. In addition, he illustrated examples of environmental conservation measures in which traditional knowledge was used, namely in the traditional protected forests of the Zigua of the Handeni District, the indigenous silvopastoral system in the Shinyanga region, harvesting of medicinal plants in Duru-Huitemba, Babati and Arusha, traditional hives in Handeni, indigenous farming system in the Matengo highlands in Mbinga District and the Rungwe traditional forest reserve. The traditional protected forests were small patches of natural forests established by ancestors to perform many social and cultural functions such as ritual worships to incite rain, protection of water sources, the conduct of clan meetings, and traditional ceremonies including training of youths, sites for hiding secret objects, protection during war and reserves for building poles. Traditional

forest patches were representative of rare climax forest vegetation, which had reached a high level of maturity and possessed a wide diversity of plant and animal species.

41. The silvopastoral system in Shinyanga region was a system where both dry season fodder and wood fuel were produced whilst conserving and protecting the soil from wind and water erosion and landslides. It also provided a preferred habitat for calf grazing during the wet season. With respect to the harvesting of medicinal plants in Duru-Huitemba, Babati and Arusha, it had been observed that local people did not destroy trees and shrubs that had medicinal value.
42. The indigenous farming system in the Matengo highlands of Mbinga District in southern Tanzania comprised a two-year rotation that included a short-term grassland fallow. Cultivation was undertaken in the form of ridges and pits which functioned as buffers to control run-off by allowing rainwater to stand. Maize was grown on the ridges during the rainy season and because the field was covered with well-grown maize, the surface soil was again protected from runoff, thus conserving the topsoil and fertility on steep slopes throughout the year.
43. Specifically, the Rungwe traditional forest reserve was established for various activities, namely: worship and prayer, burial, water catchment protection and environmental resources conservation or for a combination of those activities.
44. Conservation measures were under threat due to the increasing rate of land clearing for cultivation, weakening of traditional values and institutional structures for the protection of the traditional forests and reserves, indigenous silvopastoral and farming systems and medicinal plants. The demarcation of new village boundaries had disrupted the traditional control of forests. As a result, bordering villages, which had no historical knowledge of the importance of the forests, had seized control of those forests. There was lack of support by the national, regional, district and village governments for the continued protection of the traditional forests and farming systems.
45. In the ensuing discussion, the issue of primary and secondary data collection was reiterated. It was conceded that primary and secondary data on indigenous knowledge were vital in the analysis and subsequent outcomes of the project. Primary and secondary data should, therefore, be collected and analysed as appropriate. The issue of gender in the application and use of indigenous knowledge was raised due to the major role that women played in the protection and use of natural resources. Participants agreed that gender consideration was an important element in the application and use of indigenous knowledge in environmental conservation and natural disaster management.
46. Participants agreed that the scientific value of indigenous knowledge was an important issue which required due attention in the collection and analysis of data. It was stressed that there was a need for project coordinators to work closely with communities and national meteorological services to enhance the filtering of indigenous knowledge information on early warning predictions and signs for natural disaster events in order to ascertain the scientific value of such predictions and signs.

47. With regard to the high dependence on government interventions in the event of disasters and how that dependency could be minimized in terms of ensuring that local communities used their knowledge and resources to respond to disaster, participants felt that the culture of dependency on government intervention in the event of natural disaster events was hampering the application and use of indigenous knowledge in environmental resources use and conservation for self-sufficiency as well as in natural disaster management (prevention, preparedness, response, mitigation and risk reduction) to reduce vulnerability. The outcomes of the project would, therefore, be very useful in encouraging self-reliance.

**E. Status of the application and use of indigenous knowledge in natural resource conservation and natural disaster management: Perspectives of the Association of Indigenous Peoples of the North, Siberia and Far East of the Russian Federation**

48. Ms. Yana Dordina, Projects Coordinator, RAIPON, gave a presentation on the status and perspectives of the application and use of indigenous knowledge in the Russian Federation, which, from the Kola Peninsula in the north-west to the Chukotka Peninsula in the north east and Primorye in the east, had long been inhabited by indigenous peoples of the North, Siberia and the Far East. The total population of indigenous people numbered around 200,000, belonging to forty different ethnic groups, traditionally with a nomadic existence including hunting, fishing, reindeer herding, harvesting of wild plants and the bounties of the sea to sustain families and communities. The majority of the indigenous people had adopted a settled way of life and were continuing with their traditional activities. A federal law had established specific areas for traditional land use and the ways of life of the indigenous peoples of the North, Siberia and Far East. That law recognized that traditional land use areas should be conserved due to their high biological diversity.

49. Examples of practical use of traditional knowledge were:

(a) Whale, seal and bird conservation: using indigenous knowledge of the Chukotka to monitor seal and bird behaviour and counting whales with specific observations of ice and snow cover. Changes in ice and snow cover were the main cause of major disasters facing indigenous people, in particular, the reindeer herders;

(b) Forest resources conservation: integration of scientific and indigenous knowledge in assessing land use, biological resources and how they could be used rationally.

50. Generally, the cycle of occurrence of floods was one in every eight years but the indigenous peoples' region had experienced three floods over the last two years, indicating that the incidence of floods was on the increase with potential serious consequences for the local population and environmental resources. In addition to floods, other disasters such as forest fires, ice-covered ground, storms and earthquakes were also common events. In conclusion, she indicated that some indigenous people were able to predict storms by observing the behaviour of sea birds, such as sea gulls, the colour of clouds and the direction of the wind.

51. In the discussion that followed the presentation, it was emphasized that useful experiences and lessons could be learned from the indigenous people of the North, Siberia and Far East of the Russian Federation, particularly in terms of use of indigenous knowledge for natural disaster management and for overall self reliance.

**F. Discussion on indicative project implementation plans, data collection and analysis**

52. Mr. Kamara gave a brief presentation highlighting the various activities of the project and time frame for their implementation. He emphasized the issue of milestones when a specific output was expected. The implementation plans contained a list of all the activities and indications of time frames for the milestones. He emphasized that data collection and analysis formed one of the most important components of the project and due consideration should be given to the component in the project implementation.
53. Remarks made during the ensuing discussion stressed that given the difference in levels and stages of indigenous knowledge application and use in the project countries, the desk study should be undertaken by experts from each of the project countries instead of one expert as was envisaged in the indicative implementation plans. It was also seen as important that the time frames in the indicative implementation plans should be flexible as long as the delivery of outputs was in line with the time frames of the milestones. The indicative implementation plans are provided in annex III to the present report.
54. Regarding the use of questionnaires in data collection, it was emphasized that interactive and exchange discussion, open interview, focus group discussion, meetings, cultural mapping and intensive interviews would provide better approaches for primary data collection than questionnaires. Meetings were especially important for informing and building community trust and establishing groundwork for further data collection. The cultural mapping approach was important as it involved the use of local experts to make respondents feel that they were sharing information and the use of tape recorders would enhance the quality of information collected. The need for training of field staff in conducting interviews without the use of questionnaires was underlined.
55. Although different methods of collecting data could be used by project countries, the importance of achieving the overall project goal of capacity-building on indigenous knowledge for nature conservation and disaster management was emphasized.
56. Since data collected would have to be incorporated into a web site, it was also necessary for the data collected to be formatted in a specific way that would allow its collation into standard categories and fields to ensure consistency.

### **III. Conclusions and recommendations**

57. Mr. Kamara introduced the conclusions and recommendations of the meeting and requested the project coordinators to consider them carefully. He stressed that the conclusions and recommendations would enhance the effective and successful implementation of the project activities in the respective project countries. He urged cooperation and team work among the project coordinators and stakeholders, particularly in the exchange and sharing of information and experiences on all aspects of the project. This was very important in achieving the expected outcomes and overall project goal. The conclusions and recommendations were adopted with amendments as presented below.

58. Various issues relating to the application and use of indigenous knowledge in Kenya, South Africa, Swaziland and the United Republic of Tanzania were identified as well as key issues for consideration in implementing the project, particularly in the collection and analysis of data. The conclusions and recommendations made at the meeting were as follows:

#### **A. Conclusions**

- (a) The project focus was on providing information and building capacities for the application and use of indigenous knowledge in environmental conservation and natural disaster management within the framework of sustainable development;
- (b) Recognition of the inter-relationship between environment, climate and indigenous knowledge could help in the development and support of the productive activities of people and communities;
- (c) Indigenous knowledge systems were still intact in some communities and countries;
- (d) Elements of indigenous knowledge systems and practices could be integrated into development processes for environmental conservation and natural disaster management;
- (e) Understanding the application and use of indigenous knowledge was an important element in changing behaviour in environmental conservation and natural disaster management;
- (f) The culture of dependency on government intervention in the event of natural disasters hampered the application and use of indigenous knowledge in environmental resources use and conservation for self sufficiency as well as in natural disaster management (prevention, preparedness, response, mitigation and risk reduction) to reduce vulnerability;
- (g) In some countries, school children and indigenous communication systems (drummers, praise singers, drama, cultural institutions, etc.) were the best communicators and could serve as important and acceptable conveyors of information to and from a community;
- (h) Two main types of data existed in the project countries, namely, primary and secondary data. The status and availability of those types of data varied from country to country;

- (i) The project recognized the need to clarify terminology and would endeavour to do so by developing an appropriate checklist of common indigenous knowledge terminology used in environmental resources conservation and natural disaster management in the four project countries (for example, names of trees, plants, birds, insects, animals, clouds and wind movement, etc.) and used in traditional predictions for rain, floods, landslides, drought, earthquakes, volcanic eruptions, fishing season, planting and harvesting seasons;
- (j) Development of a web site and internet links was an important tool in promoting access to and exchange of information on indigenous knowledge. Other means of information exchange such as publications, posters, radio, television, training (at primary, secondary and tertiary levels), drama, dances and songs, were also important, in particular, for communities where services supporting web sites and internet links were not available;
- (k) A survey of local community networks would promote access to and exchange of information on indigenous knowledge;
- (l) Regarding data collection, there was a need to use interactive discussions, open interviews, focus group discussions, meetings, cultural mapping and intensive interviews as more positive approaches to primary data collection rather than using questionnaires. Specifically, meetings were important for informing and building community trust and establishing groundwork for further data collection. The cultural mapping approach in data collection was important because it involved the use of local experts to make respondents feel that they were sharing information. The use of tape recorders would help in enhancing the quality of information collected and the importance of training of field staff in conducting interviews without the use of questionnaires was stressed;
- (m) Although different methods of data collection could be used in the project countries, there was a need to achieve the overall project goal of capacity-building on indigenous knowledge for nature conservation and disaster management;
- (n) Useful experiences and lessons could be learned from the indigenous people of the North, Siberia and Far East of the Russian Federation, particularly in terms of how they have used indigenous knowledge for natural disaster management and for overall self-reliance.

## **B. Recommendations**

### **1. Targeting countries**

- (a) Systematic mapping of indigenous knowledge systems accumulated over time should be undertaken to enhance creation of indigenous knowledge nodes in specific institutions in remote areas;
- (b) Since the older generations were the major custodians of indigenous knowledge and death remained an important factor in information loss, urgent action should be taken to collect that information.

## 2. Targeting the project

- (a) In collecting data, a clear understanding of the interlinkages between application and use of indigenous knowledge and cultural and spiritual values (for example, superstition, witchcraft, beliefs in ancestors, common knowledge, taboos and totems) which permeated communities should be ensured;
- (b) Identification and categorization should be undertaken of the negative aspects of indigenous knowledge application and use to promote better understanding of impacts on environmental resources and how they lead to increased vulnerability;
- (c) Gender consideration should be given due attention in the collection of data as this is an important element in the application and use of indigenous knowledge in environmental resources conservation and natural disaster management.
- (d) Project coordinators, experts and field staff should work closely with communities and national meteorological services to enhance the filtering of indigenous knowledge information on early warning predictions and signs for natural disaster events in order to ascertain the scientific value of such predictions and signs.
- (e) Due to existing communication gaps are significant problems in collecting indigenous knowledge information from communities, project coordinators, experts and field staff should consider the following factors:
  - (i) Trust by the local community and individual respondents;
  - (ii) Common language;
  - (iii) Common knowledge;
  - (iv) Being accepted as part of the community.
- (f) In the selection of sites for primary data collection, project coordinators, experts and field staff should take into account the areas of high and low potential in terms of quality and availability of information;
- (g) Primary and secondary data should be collected and analyzed as appropriate;
- (h) Project coordinators, experts and field staff should develop an appropriate checklist of common indigenous knowledge terminology used in environmental resources conservation and natural disaster management;
- (i) A desk study should be undertaken by experts from each of the project countries.

59. In his closing remarks on behalf of Mr. Tveitdal, Mr. Kamara commended participants on the success of the present meeting and thanked them for their active participation. He wished them success and urged them to give due attention to the conclusions and recommendations of the meeting which would enhance the effective implementation of the project. On behalf of the participants, Mr. Ogallo thanked UNEP for organizing the meeting and for their selection of the four project countries. Following the customary exchange of courtesies, Mr. Kamara declared the meeting closed at 2 p.m. on Thursday, 4 November 2004.

## Annex I

### Agenda and work programme

#### Day 1: Wednesday, 3 November 2004

09.00 – 09:30	<b>Registration</b>	
09:30 – 10:00	Agenda Item 1: Opening of the Meeting <ul style="list-style-type: none"><li>▪ Brief Statement</li></ul>	Mr. Svein Tveitdal, <b>DEPI Director/</b> Ms. Elizabeth Mrema <b>O-I-C, DEPI</b>
10:00 – 10:10	Agenda Item 2: Organization of the Meeting <ul style="list-style-type: none"><li>▪ Introduction of Participants</li><li>▪ Consideration of Provisional Agenda</li></ul>	Mr. James Kamara <b>DEPI/DMB</b>
10:10 – 10:40	Agenda Item 3: Goal and Overview of the Project on Capacity Building through Partnership and Information and Communication Technology for Using Indigenous Knowledge for Nature Conservation in Africa.	Mr. James Kamara <b>DEPI/DMB</b>
10:40 - 11:00	Discussion	
11:00 – 11:30	<b>Coffee break</b>	
11:30 – 12:15	Agenda Item 4: Presentations on the status of the application and use of indigenous knowledge in natural resource conservation and natural disaster management in the project countries.	Mr. Laban Ogallo/ Mr. A.B.C. Ayayo/ Mr. William Nyakwada <b>Kenya</b>
12:15 – 12:30	Discussion	
12:30 – 14:00	<b>Lunch break</b>	
14:00 – 14:45	Agenda Item 4: Presentations on the status of the application and use of indigenous knowledge in natural resource conservation and natural disaster management in the project countries. ( <b>contd.</b> )	Mr. Krisno Nimpuno/ Mr. Conrad Steenkamp <b>South Africa</b>
14:45 – 15:00	Discussion	
15:00 – 15:45	Agenda Item 4: Presentations on the status of the application and use of indigenous knowledge in natural resource conservation and natural disaster management in the project countries. ( <b>contd.</b> )	Mr. Isaac Dladla <b>Swaziland</b>
15:45 – 16:00	Discussion	
16:00 – 16:30	<b>Coffee break</b>	



## Annex II

### List of participants

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### ANNEX III - Indicative Implementation Plans for Kenya, South Africa, Swaziland and Tanzania

Capacity Building through Partnership and Information and Communication Technology for Using Indigenous Knowledge for Nature Conservation and Natural Disaster Management in Africa: Kenya													
Indicative Implementation Plan 2004-2006													
Activity/Month	2004			2005					2006				
	S	O	N	D	J	F	M	A	M	A	M	J	
1. Funds for project implementation remitted to UNEP by the UN Development Account.													
2. Project planning: Discussion with coordinators in project countries, development of indicative implementation plans*.													
3. Organize first meeting of project coordinators and other stakeholders, and distribute report of the meeting*.													
4. Develop and conclude MOUs*.													
5. Transfer of funds on basis of MOUs concluded*.													
6. Undertake desk-study and prepare comprehensive publication on available/document indigenous knowledge.													
7. Identify national consultants to undertake specific project activities including development of workshop programme, materials and strategies.													

Activity/month	2004					2005					2006						
	S	O	N	D	J	J	F	M	A	M	J	J	F	M	A	M	J
8. Develop format for data collection (format will serve as a tool for information collection, analysis and reporting)(including designing of a standard questionnaire for data collection).																	
9. Design website**.																	
10. Collect data on use of existing indigenous knowledge:																	
<ul style="list-style-type: none"> <li>• air</li> <li>• land</li> <li>• water</li> <li>• forest</li> <li>• biodiversity (flora and fauna)</li> <li>• management of natural disasters especially floods and drought disaster events.</li> </ul>																	
11. Review status of data collection to identify weaknesses and strengths and hold discussions with DEPI/DMB.																	
12. Prepare progress report on implementation of activities																	
13. Analyse data and prepare national report.																	
14. Review status of data analysis and report preparation and hold discussion with DEPI/DMB.																	
15. Input data into website**.																	

Activity/month	2004							2005							2006								
	S	O	N	D	J	F	M	A	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
16. On the basis of the report and desk-study, prepare publication on indigenous knowledge.																							
17. Create website link with IGAD Climate Prediction and Application Centre, Nairobi**.																							
18. Test and launch website**.																							
19. Prepare project proposal for replication in other African countries and in Latin America*.																							
20. Prepare training materials and programme on application and use of indigenous knowledge.																							
21. Organize national workshop and prepare proceedings.																							
22. Organize regional workshop (Kenya, South Africa, Swaziland, Tanzania)*.																							
23. Publish and distribute national and regional workshops proceedings* and publication on indigenous knowledge.																							
24. Prepare final report of the project.																							

**Capacity Building through Partnership and Information and Communication Technology for Using Indigenous Knowledge for Nature Conservation and Natural Disaster Management in Africa: South Africa**

**Indicative Implementation Plan 2004-2006**

Activity/Month	2004			2005							2006														
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J			
1. Funds for project implementation remitted to UNEP by the UN Development Account.																									
2. Project planning: Discussion with coordinators in project countries, development of indicative implementation plans*.																									
3. Organize first meeting of project coordinators and other stakeholders, and distribute report of the meeting*.																									
4. Develop and conclude MOUs*.																									
5. Transfer of funds on basis of MOUs concluded*.																									
6. Undertake desk-study and prepare comprehensive publication on available/documented indigenous knowledge.																									
7. Identify national consultants to undertake specific project activities including development of workshop programme, materials and strategies.																									

Activity/month	2004			2005							2006															
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J				
8. Develop format for data collection (format will serve as a tool for information collection, analysis and reporting)(including designing of a standard questionnaire for data collection).																										
9. Design website																										
10. Collect data on use of existing indigenous knowledge: <ul style="list-style-type: none"> <li>• air</li> <li>• land</li> <li>• water</li> <li>• forest</li> <li>• biodiversity (flora and fauna)</li> <li>• management of natural disasters especially floods and drought disaster events.</li> </ul>																										
11. Review status of data collection to identify weaknesses and strengths and hold discussions with DEPI/DMB.																										
12. Prepare progress report on implementation of activities																										
13. Analyse data and prepare national report.																										
14. Review status of data analysis and report preparation and hold discussion with DEPI/DMB.																										
15. Input data into website**.																										

Activity/month	2004			2005							2006												
	S	O	N	D	J	F	M	A	M	J	A	S	O	N	D	J	F	M	A	M	J		
16. On the basis of the report and desk-study, prepare publication on indigenous knowledge.																							
17. Create website link with the University of Witwatersrand, South Africa**.																							
18. Test and launch website**.																							
19. Prepare project proposal for replication in other African countries and Latin America*.																							
20. Prepare training materials and programme on application and use of indigenous knowledge.																							
21. Organize national workshop and prepare proceedings.																							
22. Organize regional workshop (Kenya, South Africa, Swaziland, Tanzania)*.																							
23. Publish and distribute national and regional workshops proceedings* and publication on indigenous knowledge.																							
24. Prepare final report of the project.																							

**Capacity Building through Partnership and Information and Communication Technology for Using Indigenous Knowledge for Nature Conservation and Natural Disaster Management in Africa: Swaziland**

**Indicative Implementation Plan 2004-2006**

Activity/Month	2004			2005							2006					
	S	O	N	D	J	F	M	A	M	J	J	A	M	A	M	J
1. Funds for project implementation remitted to UNEP by the UN Development Account.																
2. Project planning: Discussion with coordinators in project countries, development of indicative implementation plans*.																
3. Organize first meeting of project coordinators and other stakeholders, and distribute report of the meeting*.																
4. Develop and conclude MOUs*.																
5. Transfer of funds on basis of MOUs concluded*.																
6. Undertake desk-study and prepare comprehensive publication on available/documented indigenous knowledge.																
7. Identify national consultants to undertake specific project activities including development of workshop programme, materials and strategies.																

Activity/month	2004					2005					2006														
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J			
8. Develop format for data collection (format will serve as a tool for information collection, analysis and reporting)(including designing of a standard questionnaire for data collection).																									
9. Design website**.																									
10. Collect data on use of existing indigenous knowledge: <ul style="list-style-type: none"> <li>• air</li> <li>• land</li> <li>• water</li> <li>• forest</li> <li>• biodiversity (flora and fauna)</li> <li>• management of natural disasters especially floods and drought disaster events.</li> </ul>																									
11. Review status of data collection to identify weaknesses and strengths and hold discussions with DEPI/DMB.																									
12. Prepare progress report on implementation of activities																									
13. Analyse data and prepare national report.																									
14. Review status of data analysis and report preparation and hold discussion with DEPI/DMB.																									
15. Input data into website**.																									

Activity/month	2004				2005				2006				
	S	O	N	D	J	F	M	A	M	A	M	J	
16. On the basis of the report and desk-study, prepare publication on indigenous knowledge.													
17. Create website link with the University of Swaziland and Swaziland Environment Authority**.													
18. Test and launch website**.													
19. Prepare project proposal for replication in other African countries and Latin America*.													
20. Prepare training materials and programme on application and use of indigenous knowledge.													
21. Organize national workshop and prepare proceedings.													
22. Organize regional workshop (Kenya, South Africa, Swaziland, Tanzania)*.													
22. Publish and distribute national and regional workshops proceedings* and publication on indigenous knowledge.													
24. Prepare final report of the project.													

**Capacity Building through Partnership and Information and Communication Technology for Using Indigenous Knowledge for Nature Conservation and Natural Disaster Management in Africa: Tanzania**

**Indicative Implementation Plan 2004-2006**

Activity/Month	2004			2005							2006														
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J			
1. Funds for project implementation remitted to UNEP by the UN Development Account.																									
2. Project planning: Discussion with coordinators in project countries, development of indicative implementation plans*.																									
3. Organize first meeting of project coordinators and other stakeholders, and distribute report of the meeting*.																									
4. Develop and conclude MOUs*.																									
5. Transfer of funds on basis of MOUs concluded*.																									
6. Undertake desk-study and prepare comprehensive publication on available/documentated indigenous knowledge.																									
7. Identify national consultants to undertake specific project activities including development of workshop programme, materials and strategies.																									

Activity/month	2004					2005					2006												
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	
8. Develop format for data collection (format will serve as a tool for information collection, analysis and reporting)(including designing of a standard questionnaire for data collection).																							
9. Design website**.																							
10. Collect data on use of existing indigenous knowledge: <ul style="list-style-type: none"> <li>• air</li> <li>• land</li> <li>• water</li> <li>• forest</li> <li>• biodiversity (flora and fauna)</li> <li>• management of natural disasters especially floods and drought disaster events.</li> </ul>																							
11. Review status of data collection to identify weaknesses and strengths and hold discussions with DEPI/DMB.																							
12. Prepare progress report on implementation of activities																							
13. Analyse data and prepare national report.																							
14. Review status of data analysis and report preparation and hold discussion with DEPI/DMB.																							
15. Input data into website**.																							

Activity/month	2004					2005												2006						
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J		
16. On the basis of the report and desk-study, prepare publication on indigenous knowledge.																								
17. Create website link with the National Meteorological Authority, Tanzania**.																								
18. Test and launch website**.																								
19. Prepare project proposal for replication in other African countries and Latin America*.																								
20. Prepare training materials and programme on application and use of indigenous knowledge.																								
21. Organize national workshop and prepare proceedings.																								
22. Organize regional workshop (Kenya, South Africa, Swaziland, Tanzania)*.																								
23. Publish and distribute national and regional workshops proceedings* and publication on indigenous knowledge.																								
24. Prepare final report of the project.																								

Key: \* Activities to be coordinated by DEPI/DMB  
 \*\* Activities to be carried out by DCPI

 Milestone output ready

