

## 6. THE UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

Among the diverse activities and programmes developed in relation to indigenous peoples within UNESCO's various sectors, the Local and Indigenous Knowledge Systems (LINKS) programme is aiming at empowering local and indigenous peoples in various aspects of environmental management by advocating recognition and mobilization of their unique knowledge. It also contributes to the safeguarding of traditional knowledge within indigenous communities by reinforcing their inter-generational transmission.

### **The Local & Indigenous Knowledge Systems programme of UNESCO**

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On 26 December 2004, an earthquake off the coast of Indonesia generated a tsunami that wrecked havoc and took more than 250,000 lives along Indian Ocean coastlines from South East Asia to the East coast of Africa. News of this unprecedented human disaster raced around the world. Even distant countries, like Germany or the United States, counted their victims due to the large numbers of tourists that were also present in the impacted zone.

But even as calls multiplied for high-tech solutions (installation of early warning systems using cutting-edge satellite and ocean buoy technologies), news began to circulate about how indigenous communities escaped the tsunami's wrath due to their traditional knowledge. Unlike numerous persons who were attracted to the shoreline by the unusual spectacle of fish flopping on a seafloor exposed by the sea's withdrawal, the Moken and Uruk Lawai peoples of Thailand's coasts and islands, the Ong of India's Andaman Islands and the Simeulue community of Indonesia all knew to head rapidly inland to avoid the destructive force of the sea. The small villages of the Moken and Ong were completely destroyed, but their inhabitants escaped unscathed. Even more striking was the displacement of more than 80,000 Simeulue peoples beyond the reach of the tsunami. Only 7 persons died. This surprisingly efficient response, striking in its contrast with the frightening losses suffered elsewhere in Indonesia, was acknowledged by the granting of a UN Sasakawa Award for Disaster Reduction to the Simeulue peoples.

So quite unexpectedly, the Indian Ocean tsunami drew world attention to the traditional knowledge of indigenous peoples and its relevance to the emerging priority domain of natural disaster preparedness and response.

### **Local and Indigenous Knowledge Systems**

UNESCO launched the Local and Indigenous Knowledge Systems (LINKS) programme in 2002 (cf. [www.unesco.org/links](http://www.unesco.org/links)). Contributing to the Millennium Development Goals of poverty eradication and of environmental sustainability, the programme goal is to empower local and indigenous peoples in various aspects of environmental management by advocating recognition and mobilization of their unique knowledge, know-how and practices. It also contributes to the safeguarding of traditional knowledge within indigenous communities by reinforcing their inter-generational transmission, including through the development of education resources based upon local knowledge and in indigenous languages.

The LINKS initiative grew out of the debate generated by UNESCO's inclusion of indigenous knowledge on the agenda of the "World Conference on Science" (Budapest 1999). The placement of scientific and indigenous knowledge on equal footing triggered vigorous discussion amongst scientists about the status and validity of different sets of knowledge. Some questioned whether it was appropriate for the world's scientific community to give such high-level recognition to these 'other knowledge systems'. Responding to this debate, the International Council for Science (ICSU), with the support of UNESCO-LINKS, produced a report on "*Science, Traditional Knowledge and Sustainable Development*" that was launched in Johannesburg during the World Summit on Sustainable Development. It underlines the importance of traditional knowledge in sustainable development, while dissipating scientists' concerns by clearly differentiating science and traditional knowledge from pseudoscience (ICSU/UNESCO 2002).

### **Towards equitable Environmental Management**

Since its inception, LINKS combines field-based action with efforts to raise awareness and build dialogue among indigenous knowledge holders, scientists, decision-makers and the public at large. One illustration of this effort is the recently released book on "*Fishers' Knowledge in Fisheries Science and Management*" (Haggan, Neiss and Baird 2007). It presents case studies that demonstrate how indigenous, artisanal and even commercial fishers' knowledge are being used, alongside science, to strengthen management of the world's fisheries.

Commercial fishers of the northwest Atlantic, to provide just one example, are greatly assisting government efforts to re-establish spawning areas that have been wiped out by overfishing. They are the only ones to know precisely where historical offshore areas conducive to spawning were located. These areas can subsequently be the focus of research and interventions to reintroduce spawning populations. By recognizing the value of indigenous knowledge, as well as its unique nature, and providing indigenous knowledge holders with a prominent role in research and management decision-making, efforts to manage renewable resources can gain in effectiveness and equity.

For collaborative natural resource management to work, however, a first requirement is to enable local knowledge holders and scientists to engage in an effective dialogue. While that's easy enough to say, in reality there are numerous linguistic and conceptual barriers that need to be overcome. Often, local peoples and science-trained resource managers end up talking past each other, with confusion and frustration being the only mutually shared outcome. To help overcome this dilemma, the LINKS programme has initiated its *Knowledges of Nature* publication series.

The first volume entitled "*Reef and Rainforest: An Environmental Encyclopedia of Marovo Lagoon, Solomon Islands*" offers a meticulous documentation of Solomon Islander knowledge of reef and land topography, and of marine and terrestrial animals and plants. At the request of the Marovo peoples, Professor Edvard Hviding of Bergen University, Norway, has compiled more than 1200 Marovo terms that are each accompanied by definitions and explanations in both Marovo and English. Scientific equivalents for Marovo taxa are provided, where applicable. Of course, many Marovo terms have no scientific equivalents, despite the fact that the knowledge underlying the terms may be of considerable interest for biodiversity management. For example, several Marovo terms designate and differentiate between fish schools on the basis of their composition (i.e. one or multiple species; and which species) and their behaviour (i.e. whether schools are feeding, spawning or just on the move; whether they travel at the ocean's surface, just below or deep in the water column; whether they move in a straight line or often change direction; etc.). The encyclopedia also includes indexes that allow speakers of two other indigenous languages, Hoava and Vanunu, to share in its use. In sum, the Marovo Encyclopedia (Hviding 2005) is a first effort to bridge the conceptual and communication gap between indigenous knowledge and science, and to lay foundations for a productive dialogue rooted in mutual understanding and respect.

### **Water and Indigenous Peoples**

The role of local and indigenous knowledge in biodiversity conservation has gained international prominence, if not always recognition, notably through debates in the framework of the Convention on Biological Diversity, in particular its Article 8(j). In other sectors, however, sensitivity to the issue has lagged behind. One such area is water resource management. To build awareness and promote a broadened debate on the role of local and indigenous knowledge in this important domain, the LINKS programme has organized international events and produced publications on the theme of Water and Indigenous Peoples. In the framework of the World Water Forum (WWF), LINKS organised side events that brought indigenous speakers to the Second WWF in The Hague in 2000, and to the Third WWF in Kyoto in 2003. From these two events a publication was produced on Water and Indigenous Peoples (Boelens, Chiba and Nakashima 2006) that was launched at the Fourth WWF in Mexico City (2006). Subsequently, an updated and revised Spanish version entitled *El Agua y los Pueblos Indígenas* was jointly produced with UNESCO's Water Sciences Division, and launched at the Sixth Inter-American Dialogue on Water Management that took place in Guatemala City in July 2007.

### **Strengthening the transmission of indigenous knowledge**

In addition to empowering local and indigenous communities in biodiversity governance, the LINKS programme also seeks to maintain the vitality of local knowledge within communities. Indigenous and local rural peoples are generally marginalized by mainstream society. In the formal school system, this results in the exclusion, and even denigration, of local knowledge, values and worldviews. The resulting alienation, loss of identity and self-esteem, is devastating for indigenous youth and for the society as a whole. In several of its field projects, LINKS seeks to strengthen ties between elders and youth in order to reinforce the transmission of indigenous knowledge and know-how, and boost pride and self-esteem.

One approach targeting indigenous youth has been the use of new information and communication technologies, such as multimedia CD-ROMs, as a vehicle for conveying traditional knowledge. The LINKS CD-ROM series includes two interactive CD-ROMs, the first on Aboriginal Australian life-worlds entitled "*Dream Trackers - Yapa Art and Knowledge of the Australian Desert*" (Glowzewski 2000), and the second on Pacific Islander knowledge of the ocean environment, canoe construction, navigation and sailing, entitled "*The Canoe is the People: Indigenous navigation in the Pacific*" (UNESCO 2005). The "Canoe is the People" CD-ROM combines interviews with prominent master navigators (e.g. Mau Pialug from Satawal; Sir Tom Davis from the Cook Islands; Hek Busby from New Zealand), videos of canoe building and rope and sail fabrication, animations to explain complex navigational knowledge, and interactive maps showing major voyages of the recent Pacific-wide voyaging revival. In collaboration with Waikato University (New Zealand), an updated Maori language

version of the CD-ROM has been recently released (2007) entitled: “*He Waka He Tangata: Te Whakatere a-Iwi-Taketake i te Moana-nui-a-Kiwa*”. It is hoped that in the near future there will be an opportunity to produce this popular and instructive CD-ROM in other Pacific languages.

As the ultimate goal of the Canoe is the People CD-ROM is the strengthening of indigenous knowledge and languages in Pacific classrooms, UNESCO-LINKS is also developing a Learner’s Resource Pack to facilitate its integration in educational curricula. The Resource Pack will include a teacher manual, student workbooks and lessons, a map and poster, and other support materials to assist teachers with the effective use of the CD-ROM in their classrooms.

Efforts to produce educational materials in indigenous languages with strong roots in indigenous knowledge are also being pursued in Latin America. In the Bosawas Biosphere Reserve of Nicaragua, a team of Mayangna from the community of Arangdak are elaborating an 'encyclopedia of nature' that will serve both as a reference for the education of Mayangna children, as well as a means to reaffirm the status of the Mayangna as knowers and managers of the lands and resources of the Reserve. The work focuses on elucidating the economically important category of 'things of the water', describing the numerous types of fish as well as turtles that frequent the Reserve’s drainage basins. In this first volume, to be produced in Mayangna and Spanish, indigenous ecological knowledge is complemented by Mayangna accounts of fishing technologies and techniques, and by relevant stories and legends, all illustrated by local artists. In Chile, LINKS is working with the Asociación de Comunidades Mapuche Pewenche Markan Kura, a local indigenous NGO. Educational materials centering on the Monkey puzzle tree (*Araucaria imbricata*), a keystone species for the ecological system, and a core economic and cultural feature of Mapuche society, are currently being considered by the Ministry of Education for inclusion in school curricula.

### **Climate Change and Natural Disasters: Emerging programme priorities for UNESCO-LINKS**

The UN system is currently mobilizing to respond to the looming challenge of global climate change. Anticipated impacts, such as increased climate variability, extreme meteorological events, drought, flooding, sea level rise or the melting of polar ice and high altitude glaciers, will have particularly devastating effects on impoverished and marginalized communities, many of these indigenous. But major threats are not only associated with the direct impacts of climate change. Ironically, for some indigenous communities, the worst may be due to climate change mitigation i.e. efforts to reduce or compensate for greenhouse gas emissions. Cases are emerging where indigenous peoples are being evicted from their lands in order to allow the planting of trees for bio-carbon sequestration as part of the emerging carbon trade. Energy development is returning to hydroelectric power, seen as a clean and renewable source of power, but one that has often led to the displacement of large numbers of people from traditional homelands. It is therefore urgent to comprehend the impacts on indigenous peoples of climate change, as well as mitigation measures, and to develop strategies for adaptation.

But indigenous peoples should not be seen as mere victims of climate change. They have been confronted with changing environments for millennia. They have developed a wide array of coping strategies, and this indigenous knowledge and practice provides an important basis for facing the even greater challenges of climate change. The Moken, Uruk Lawai, Ong and Simeulue astounded the world with their resourceful and life-saving response to the destructive force of the Indian Ocean tsunami. They showed the world that there is much to learn from indigenous and community-based approaches to natural disaster preparedness. Similarly, while indigenous communities will undoubtedly need much support to adapt to climate change, they also have much expertise to offer on coping through diversified production systems, fallback resources, social solidarity networks, innovation and other traditional mechanisms.

UNESCO through its LINKS programme is developing a register of case studies focusing on indigenous knowledge and practice relevant for climate change adaptation. Some of these case studies may be selected for additional in-depth documentation. Case studies are also to be collected on climate change mitigation measures and both their positive and negative impacts on indigenous communities. Indigenous peoples who are interested in participating are invited to submit case study information to UNESCO for compilation and comparative analyses ([links@unesco.org](mailto:links@unesco.org)). While UNESCO is not a funding organization, in a select number of cases, some seed funding support may be available to further community-based research into the emerging priority area of 'indigenous knowledge and climate change'.

**UNESCO-LINKS publications**

To access or obtain copies of available publications, go to [www.unesco.org/links](http://www.unesco.org/links).

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