

# Linking Local Health Tradition with Biodiversity, Conservation and Sustainable Development

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Every day the hazards and disasters caused by Climate Change, ranging from droughts, flooding, to the melting of glaciers become more apparent. The global hydrological (fresh water) cycle is one of the primary systems that is most detrimentally affected by these changes and which has become seriously imbalanced. This threatens the future of all of Earth's ecological systems along with humanity. These threats have prompted greater awareness and global interest in sustainable development, which has led to many questions concerning how this can feasibly be achieved. Sustainable development is a way of using resources, with the aim of meeting human needs while preserving the environment (U.N, 1987). This is so that these needs can be met, not only in the present, but also in the indefinite future. Protection of the environment is fundamental to sustainable development. When considering sustainable development, fresh water is of paramount importance and needs serious attention, as it is essential for all. In relation to this it is fundamental to consider mountain regions, as they cover approximately 25% of the Earth's land surface and source most of the Earth's fresh water repositories (U.N General Assembly 29/9/05). All of Earth's rivers originate in the mountains and sustain all ways of life (UNCED, 1992). 'Climate Change' is melting ice and snow in the mountains. This is leading to glacial lake outbursts and land slides and disrupting the amount and timing of fresh water released to the lowlands. This situation causes problems with the quality and quantity of fresh water available everywhere (U.N.U Tokyo, 2002). In South America, Andean cloud forests are vanishing fast and environmental degradation is destabilizing the hydrological cycle. In the northern region of Peru, these problems are increasing vulnerability to the El Niño phenomenon. This has important consequences for weather around the globe (INRENA, 2005). The deforestation that has taken place on the Tibetan plateau is also affecting the El Niño phenomenon and is disturbing the Asian monsoon patterns (TPPRC, 2003). It has been reported that, in the past half-century, 82% of the plateau's glaciers have retreated and in the past decade 10% of its permafrost has degraded. It is feared that, if this continues, it will adversely affect the water supply for billions of people and alter crucial atmospheric circulations (Jane Qui, Nature, 2008). This is proving to be very dangerous to global stability and undermines all sustainable development. In relationship to Earth's fresh water, it is vital to consider forests, especially mountain forests, as they play a major role in the global hydrological cycle (INRENA, 200). In mountain regions cloud forests are particularly valuable for their capture of water that is combed from mists and moving clouds. They are also of immense importance in maintaining a steady supply of fresh water to all the lowlands and downstream areas. (Hamilton, L.S. 1996) At high altitudes these waters and mists become snows and are an important part of the global cooling system.

On a global scale, all forests play a crucial role in climate regulation and constitute one of the major carbon sinks on Earth (UNEP). Unfortunately too much of the world's forests have been cut. In 1945 ancient forests covered 25.2 million hectares of the high Tibetan plateau. By 1985 the forests had been reduced to 134,000 square kilometres (TPPRC, 2003). This is only a fraction of what has happened globally. Mountain forests channel the fresh waters, into the underground aquifers and feed into all of Earth's water tables (Hamilton, LS. 1996). When these forests are extensively cut, massive problems occur and the water tables diminish. Bearing this in mind it is essential to look at what can be done to restore and preserve the high altitude forests as fast as possible. Any action taken, needs to involve all levels of society. Co-operation is necessary to enable the long-term sustainability and effectiveness of an endeavor of this magnitude and importance. Hence it needs to involve governments, scientists and equally importantly, grassroot communities. The involvement of mountain communities is fundamental in this and the methods used need to fit with their requirements and traditions. Traditional methods of conservation have, been developed over centuries. They are based on well founded observations that document the most effective methods to sustain the required resources and have been transmitted to future generations (Ohmagari and Berkes, 1997). Some of these could be very useful in helping to regenerate global mountain regions. Restoring mountain forests is particularly difficult when the old forests and top soils have been so severely diminished. To grow new forests in these conditions, it is necessary to reestablish the complex root structures and canopies, to resemble that of a mature forest. A traditional knowledge system, which could be very useful in helping solve these environmental problems, is the Ayurvedic medicine system, developed over thousands of years in India. This system of knowledge, usually used for human ailments, can also provide us with knowledge for environmental restoration. There are medicinal plants, indigenous to mountain regions, which will grow in arid lands and which possess properties that can be utilized to potentially re-establish indigenous mountain forests fast (FAO. 2001). Some of these plants are capable of growing in some of the most badly eroded and degraded soils (Dhar, 2002) and others are known for their Phytoremediation qualities, making them capable of removing heavy metals and toxins from the land (Shimp, et al, 1993). Some also have strong, fast growing root systems, which helps in preventing land erosion, as they hold the soils on the slopes in place. Speed is of the essence and of utter importance in this endeavor. Every time heavy rains fall precious soil is washed away. Once an area becomes bare rock, it is no longer possible to introduce plants. One way to re-establish biodiversity is to give the local communities the right to look after it. Due to the depletion of the ecology in mountain regions, mountain communities are some of the poorest on Earth. 500,000,000 people, which is approximately 80% of the world's mountain population, live below the poverty line (U.N, Tokyo 2002). Poor people are obliged to exploit whatever resources they may have access to for survival. In regard to this it is of utmost importance to find a re-forestation method which could fit with their ways of life. It has to be a way which can help these communities by bringing new wealth and vitality to their lives. So long as local communities are involved in the management of the land and the natural resources, traditional conservation techniques are still capable of protecting the surrounding biodiversity (Dei 1993; Williams and Baines, 1993). This gives a direct bond and attachment between them and their surrounding environment. A way that past generations have successfully done this was by declaring some areas as 'Sacred Groves'. This is a traditional knowledge system which has been recognized to be invaluable in environmental conservation throughout global history (Gadgil and Vartak, 1976). Sacred groves are often the remnants of the primary forest which have been cared for and protected by the local communities. Many contain water resources that are important for ecology (Hughes and Chandran, 1997). Throughout India, designating areas of forest as Sacred Groves has been the predominant traditional method of environmental conservation (Boojh and Ramakrishnan, 1983). This model of conservation may be one that can be adopted in present times for saving and restoring biodiversity (Gadgil M. and Vartak V.D. 1975). Local traditional communities usually protect these groves

through customary taboos and sanctions. Well preserved Sacred Groves are storehouses of valuable medicinal plants which have high land restorative value. They could be utilized as a method of land reclamation and regeneration. This would involve the creation of new groves and the preservation and restoration of existing ones. It could provide a way of linking mountain communities throughout large areas of mountainous regions and even the world. It is very important that the connecting of different areas of land, communities, cultures and knowledge systems takes place. This is because isolated patches of biodiversity and local preservation do not have a very large global environmental impact. It is possible that if numerous new small groves were created throughout the mountain regions, linking communities and creating networks between them with green belts, that the impact would be much greater. Each grove could be planted in such a way, as that every village had a five to ten acre grove within its vicinity. Linking new groves with existing groves; the latter being already significantly important for local communities, would mean that these communities would feel more devoted and protective towards the new ones. This would be a way of uniting the old and the new together and would therefore give these groves greater cultural stability. There are a few conservation systems that have been developed in the last century, that are inspired by traditional conservation methods. 'Permaculture' and 'Forest Gardening' are two examples of these. Both contain methods, which could prove to be very useful for creating and sustaining groves and green corridors. It has already been agreed by world governments that high levels of funding, investment and greater support are required in mountain areas. This is essential for the survival of both highland and lowland communities (U.N, General Assembly, 2005). In this respect it would be of benefit for downstream communities to invest in mountain region rehabilitation (Bishkek\_2002). The fact that the tradition of Sacred Groves has been global, gives it the capacity to potentially fit with many different cultures. This could conceivably work as a global environmental restoration and conservation program. Sometimes it is important to not only ask the question of "what can be made from a venture" but also "what can be saved?" In these circumstances there is much to be saved. Something needs doing immediately and humanity does not have time for further deliberations.

*"Where there are threats of serious or irreversible damage; lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."*  
(UNCED, 1992 .Principle 15)

With this in mind and with concerted effort and action on the part of governments and ordinary people, it might yet be possible to someday achieve the Millennium Development Goals agreed upon by the United Nations in the year 2,000 A.D .