

Fragile Landscapes

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In times of global climate change sensitivity of landscapes to environmental deterioration is gaining increasing scientific attention because of the latter's adverse impact on agronomic productivity, the environment and, ultimately, the welfare of societies. This issue of DIE ERDE is entitled "Fragile Landscapes" and contains five case studies covering a range of different topics all referring to the term fragility.

Originally, the fragile landscape concept was developed in the 1980s mainly under the auspices of the Food and Agriculture Organization (FAO) to secure future food production on so-called non-prime lands. The term fragile is commonly applied to areas of steep slopes, or arid or semiarid lands with scarce rainfall or poor soil quality. In this context fragility is defined as the sensitivity of land to significant deterioration under human use (*Denevan* 1989). Thus, fragility is not an inherent bio-

physical quality, but a relative concept closely linked to land management.

The contributions by *Borchardt* et al., *Schütt* and *Wenclawiak*, and *Häring* et al. are more or less compatible with this definition once developed for purposes of practical application. By contrast, the severe soil erosion processes described by *Moldenhauer* et al. do not really match the definition, because they occur on prime lands which are not mentioned as fragile and which have been utilised successfully for centuries. The instability of slopes due to earthquakes in Kashmir as examined by *Nüsser* et al., too, is a natural disaster par excellence and not the result of agricultural mismanagement. However, in the two latter cases the landscape is obviously not in a state of long-term stability, and, after all, for the populations that have to bear the consequences of such hazards it is irrespective whether

damaging events are of natural origin or due to human-induced environmental degradation. In this respect and due to the fact that global transformations such as climate warming are likely to extend the area of fragile lands an expanded notion of fragility is required.

According to *Phillips* (1999), landscapes sensitive to small perturbations may be characterised as unstable or fragile, whether linked to human land use or not. From this follows that any ecological system may eventually become fragile either through frequent small perturbations or by a single event of high magnitude. Here a dilemma becomes obvious: Apparently, every landscape is fragile to some degree but there is the need for humankind to utilise the land.

The articles presented here show that the factors responsible for a landscape to be fragile

are manifold, too, and that landscape fragility is a complex issue. Against the background of global change and population increase it seems very unlikely that there is sufficient environmental consciousness to prevent the world's landscapes from further deterioration. In this context it is remarkable that all the case studies in this issue conclude with a more or less pessimistic perspective.

Denevan, W.H. 1989: The Fragile Lands of Latin America. – In: *Browder, J.O.* (ed.): *Fragile Lands of Latin America: Strategies for Sustainable Development*. – Boulder: 3-25

Phillips, J.D. 1999: *Earth Surface Systems: Complexity, Order and Scale*. – Oxford

Klaus-Martin Moldenhauer (Frankfurt)