

**COMLAND Reykjavik Conference  
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**Land Degradation and Mitigation: Problems - Conflicts - Solutions**

**Closing Comments on the Paper Presentations, by Arthur Conacher  
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It is not possible or desirable to summarise every paper in just 2 pages, and I ask the contributors not to be upset if they or their pet topics are not mentioned explicitly.

There was a good mixture of 29 papers well grouped into a number of themes. Inputs came from Iceland, of course, and also the Middle East generally, Kuwait, Australia, Sweden, France, Spain, Poland, Israel, Belgium, South Africa and Portugal.

*Theme 1* concerned the global view and included the formulation of policies, landcare, integrated catchment management, the involvement of local communities in development, and the implications of various policies for land degradation.

*Theme 2* had a big emphasis on vegetation cover in Iceland in relation to erosion by water and wind: how the vegetation has changed, and how it is being managed and should be managed in the future. The commonly-expressed question worldwide concerning the relative roles of humans and natural events was raised. Usually the natural events concern climate change; here, they involve the history of lava flows and deposition of tephra and volcanic ash, plus very strong winds, and their effects on settlements and vegetation; versus clearing of woodlands, overgrazing, and impacts of tourist trampling and off-road vehicles.

The emphasis on over-grazing or over-stocking was compared with Thornes' hyper cycle approach, which (amongst other things) drew attention to the social problems associated with de-stocking, especially in Africa.

*Theme 3* dealt with the effectiveness of reclamation techniques (and whether some severely degraded areas should be managed at all or just left as they are) and included excellent contributions by officers of the Iceland Soil Conservation Service. Many of the reclamation techniques involve various combinations of tree planting, establishment of lupins and the use of fertilisers on native pastures. Possible problems with the introduction of new 'weeds' were raised, as was the question of what is 'natural'. This theme fitted in well with Freddy Rey's bio-engineering approach to gully reclamation, and the role of vegetation and soils in absorbing carbon.

*Theme 4* was a largely techniques-orientated group of papers, with an emphasis on remote sensing and geographic information systems. But we were also exposed to a range of other techniques including dating, soil plots, reconstructions from historical and other records, palynology, aeolian sediment traps, analysis of sediments for heavy metals, and geostatistics. There were queries concerning the identification and usefulness of thresholds and indicators.

*Theme 5* concerned elements of prediction and modelling of vegetation, erosion and grazing cycles, sediment yield and vegetation in relation to climate change; and risk analysis.

*Theme 6* incorporated aeolian processes in relation to environmental change, road closures and the effectiveness of revegetation.

*Theme 7* was an industrial one. There was a range of interesting papers from Israel, South Africa and Poland on land degradation associated with mining waste disposal, oil spills, contamination by heavy metals and risks. We were left with Elna Van Niekerk's disturbing image of an extensive, densely-populated, gold mining region in South Africa underlain by acid groundwaters with a pH as low as 1.7, and Moshe Inbar's  $R = EHV$ ; where R is risk, E the number of victims and affected elements, H the hazard magnitude and V, vulnerability.

## **The Future**

So, where does that leave us?

COMLAND's origins were very much in geomorphology. We were concerned with describing, analysing and predicting land degradation, and understanding processes in a range of global environments.

Increasingly there has been a shift towards management. This involves acquiring new skills and people to deal with the social, economic and policy aspects of land degradation and its management.

The Iceland meeting strongly demonstrated this shift.

There is an important role for COMLAND and its successors to evaluate and compare the effectiveness of land management designed to prevent land degradation and to rehabilitate degraded land in a range of natural and human environments. But land degradation management must be based on good science: on a sound understanding of the processes and mechanisms responsible for the problem. Otherwise the policies and management will fail.

Accordingly, the case for the continuation of COMLAND for the four years after the Glasgow IGU Congress will emphasise the management of land degradation, including an increased incorporation of social sciences. I am delighted to say that in association with this change, Michael Stocking has agreed to be nominated to the IGU as the next chair of COMLAND, following Moshe Inbar's term which ends in August 2004.

Finally, I take this opportunity to thank Guðrún Gísladóttir especially for her excellent organisation of this very successful Iceland meeting. I also thank the session chairs and the presenters of the 29 papers. The quality of the presentations was invariably high. But it is not over yet ... .