

Authors of Part I

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Background

A special Symposium was organised on 9 September 2004 by the IASUS Working Group of IUSS, on the occasion of the Eurosoil Conference held in Freiburg, Germany, from 4-12 September 2004. The Symposium focused on “Putting soils higher on the international agenda”; it invited a number of specialists to contribute to international efforts towards sustainable land management. Part I of this book summarises the main activities and outcomes of the Symposium.

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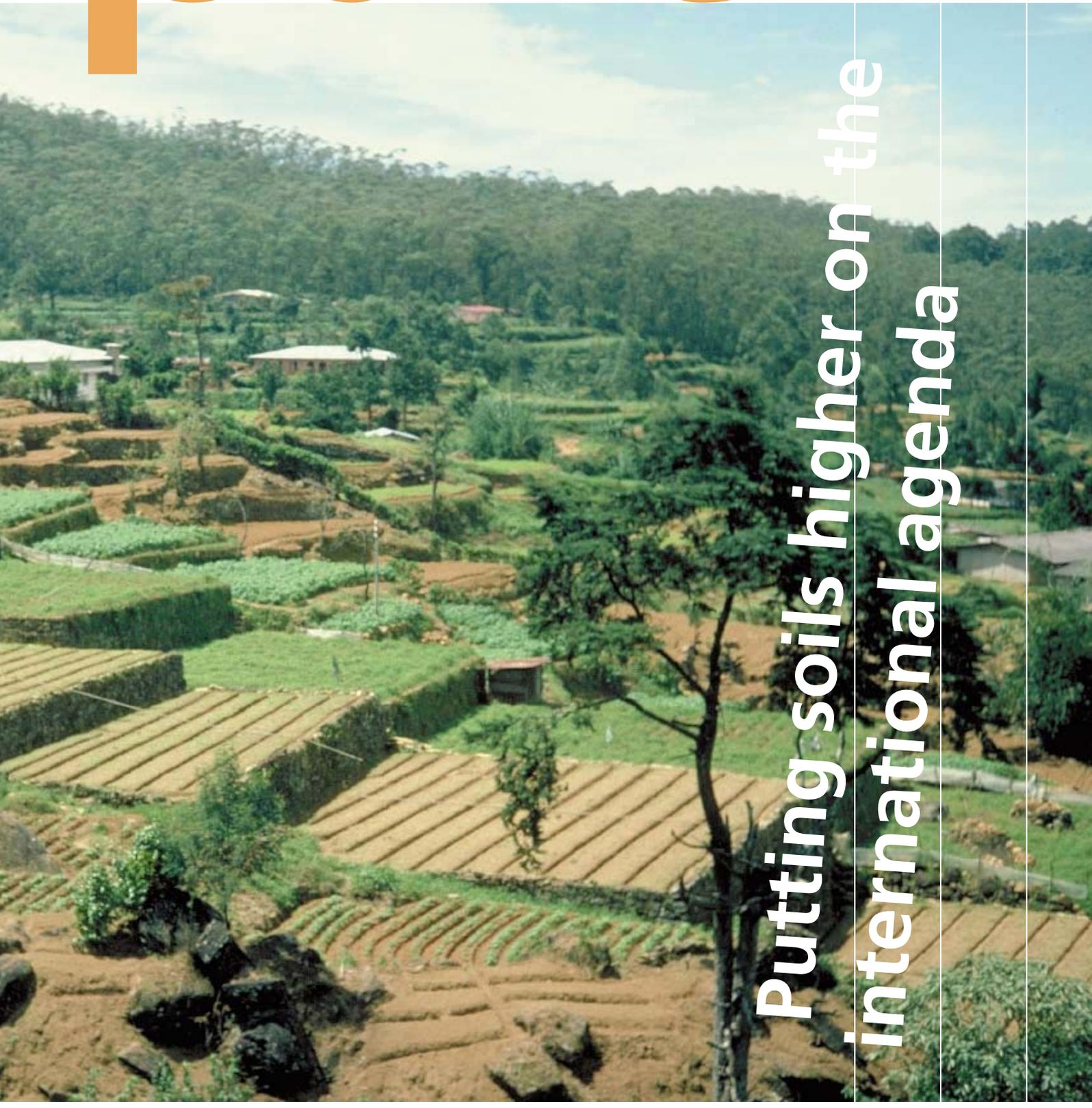
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Right:
Intensive terracing for horticulture
in the Highlands of Nurelia, Sri Lanka.
Photo by Hans Hurni



part I

Putting soils higher on the
international agenda



A Symposium on global soil issues

Background

A number of international mechanisms have recently included soils as a natural resource of vital importance. Be it for carbon sequestration, soil biodiversity preservation, as a basis for agricultural production or simply a living space, soils have multiple functions that are vital to global sustainability of the earth as a living system and basis for human survival.

But how can these multiple demands be satisfied? Where are the specialists willing to invest time and resources to putting soils higher on the international agenda? Are soil and land management specialists involved in the Millennium Development Project? Are soil issues adequately covered by the Framework Convention on Climate Change? Or in the Convention on Biological Diversity? The Convention to Combat Desertification? Does the Global Environment Facility promote enough projects dealing with sustainable land management? Stakeholders caring for healthy soils are invited to become much more active in these mechanisms.

So far there is little indication of effective international cooperation between scientists, policy makers and other stakeholders in relation to combating

land degradation and furthering sustainable land use and management.

The Eurosoil Conference was used as an occasion for an initiative by the IUSS Working Group IASUS to help improve the status of soils on the international policy agenda. IASUS is the acronym for "International Actions for the Sustainable Use of Soils". The Working Group was established by the international Union of Soil Science (IUSS) in 1998 and prepared the World Soils Agenda (Hurni and Meyer, eds., 2002) adopted by IUSS in 2002. The need for improved science policy dialogue through an appropriate mechanism was highlighted at Eurosoil by presentations and a panel discussion involving representatives from key international programs and institutions.

Objectives

This one-day Symposium was held on 9 September 2004 and attempted to provide an overview of science and policy-focused international actions on sustainable land management, to identify potentials for increased added value through closer cooperation and better dialogue amongst science and policy (society), for instance through the mechanism of an international panel on land and soils. Specifically, the Symposium aimed to convene re-

presentatives from major international organisations, to share information on their work in relation to soil and land use issues, and to reflect on the need for further action on soil degradation and sustainable land management.

The World Soils Agenda

IASUS Chairman Hans Hurni opened the Symposium with a contribution entitled “Challenges and Implementation of the IUSS World Soils Agenda adopted in 2002”. He reminded the participants of the contents of the agenda adopted, and especially the contributions that are expected from the community of soil scientists.

Hans Hurni referred to the importance of the multi-level stakeholder approach, which has evolved over the last 40 years and is the approach currently taken by leading institutions worldwide to assess and negotiate conflicting issues of natural resource management and global environmental change, and to agree on improvements. Policies that support sustainable land management must address scientific and strategic issues, respond to current and future challenges, and take into account the accumulated experiences of stakeholders at all levels (cf. Fig.1).

Apart from the Symposium being an open forum for participants to interact with key stakeholders in science, higher education and policy, it also helped shape the actions of the IUSS Working Group. IASUS functioned as a body of independent opinion leaders who act together to shape global, regional and national science, policy making, and implementation to support sustainable land management in future.

A World Soils Agenda

- Agenda 1: Assessing the status and trends of soil degradation at the global scale
- Agenda 2: Defining impact indicators and tools for monitoring and evaluation
- Agenda 3: Developing principles, technologies, approaches and enabling frameworks for sustainable land management
- Agenda 4: Identifying an international, multi-disciplinary network for soil issues
- Agenda 5: Establishing an intergovernmental panel on soils
- Agenda 6: Providing guidance to develop and implement national soil policies
- Agenda 7: Promoting initiatives for sustainable land management
- Agenda 8: Ensuring inclusion of soil-related issues in development programmes
- Agenda 9: Providing guidance for national and local action

(IUSS Resolution, 17th WCSS Bangkok, 2002)

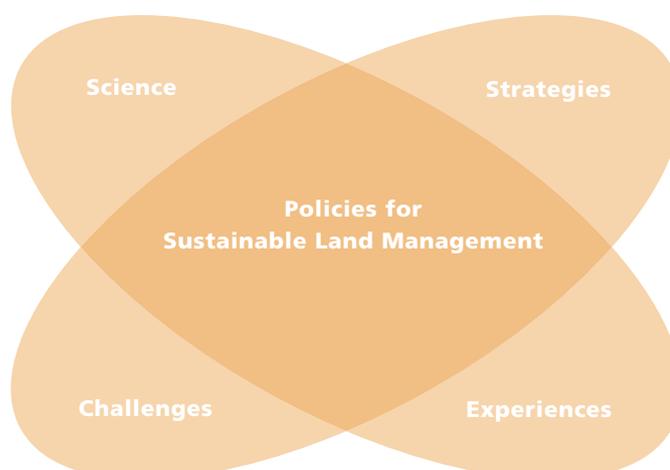


Figure 1: Issues in policies for Sustainable Land Management (cf. Hurni, p 23)



Science in support of sustainable land management policies

One of the main tasks for science in support of sustainable land management (SLM) is to produce evidence on the impact of land degradation on natural resources, particularly soils, and to assess the implications on society, economy and policy from such impacts.

At the Eurosoil Symposium there was a clear consensus regarding the need for more detailed, convincing, credible “hard” data regarding the extent and impact of land degradation worldwide. In particular, the need to quantify the economic costs of land degradation was highlighted, despite all the difficulties involved in such a quantification exercise. In particular, GLASOD (Global Assessment of Soil Degradation) was seen as influential and widely used, although there are scientific and practical problems (no linkage to land users’ concerns and sustainable land management (SLM) practices).

The following current assessment efforts were presented:

LADA

The project “Land Degradation Assessment in Drylands” is an important international assessment hosted by FAO. It is directed towards policy change and is action-based. The objective is to build assessment capacities to enable analysis, design, planning and implementation of interventions to mitigate land degradation and establish sustainable land use and management practices. Methods and tools will help to assess, quantify and analyse the nature, extent, severity and impacts of land degradation on ecosystems, watersheds and river basins, and carbon storage in drylands, at a range of spatial and temporal scales. Changes in the “capital assets of rural livelihoods” caused by degradation or rehabilitation are assessed, using the DPSIR approach. Michael Stocking underlined the importance of sustainable management of drylands for poverty alleviation and stressed opportunities for collaboration with WOCAT.

WOCAT

The programme “World Overview of Conservation Approaches and Technologies” is a worldwide network, with a secretariat at CDE in Bern. Its mission is to share knowledge about soil and water conservation technologies and approaches, and support decision-making in the field and at planning levels. As Godert van Lynden explained, WOCAT concentrates on promising and successful approaches and technologies in sustainable land management in different social, economic and ecological contexts. It is based on the assumption that there are still many knowledge gaps, misconceptions and false assumptions regarding sustainable land management at all levels, which must be addressed through training, evaluation and scientific cross-checking. WOCAT offers a comprehensive approach to monitoring, evaluating and appraising soil and water conservation technologies and approaches. It offers evaluation tools, tools for international exchange (website, on-line tools), workshops and training, conferences, and awareness building and training. It also aims to bridge the gap between research and policy.



Far left:
Heavy surface runoff caused by extreme rainfall. Central Ethiopian Highlands.

Left:
Labour-intensive construction of terraces to prevent soil loss. Central Ethiopian Highlands.

Photos by Jürg Krauer

GLADA

The project idea “Global Assessment of Land Degradation and Improvement and Early Warning”, was presented by David Dent, ISRIC. Its aim is to provide better data for policy, planning, investment and action related to food and water security, forestry, biodiversity and environmental services. This research programme (currently in a pilot phase) aims to produce data that are quantitative, reproducible by defined procedures, and allow universal comparisons. It is based on an innovative approach to assessment of resource degradation and improvement through better forecasts, monitoring and early warning. It will use global satellite data that permit measurement of global change from the local to the global scale. Biomass will be used as an integrated measure of biological productivity.

MA

The “Millennium Ecosystem Assessment” was launched in 2001 and is governed by a number of UN bodies and governmental and private sector representatives. MA was designed to meet the needs of decision makers and the public for scientific information about the consequences of ecosystem change, including changes to land and soil ecosystems. In particular, the programme is expected to provide various multilateral environmental agreements (such as CBD and UNFCCC) with such assessments. The MA is based on available data and does not generate new empirical data. Soil and land issues have not figured very prominently in the reports available up to now. The results of the MA should be examined in greater detail and commented on by IASUS.



Strategies to support sustainable land management

Different organisations have different strategies and programmes to support sustainable land management (SLM). Four major strategies were described at the symposium: the strategies of UNEP, EU and Germany, and a new idea for an international mechanism.

UNEP's approach to land management

Jens Mackensen presented UNEP's approach to land management. He addressed the environmental dimensions of land use management and soil conservation as they relate to the overall objectives of sustainable development and poverty reduction. In its recently published strategy for land use management and soil conservation, UNEP suggested applying the Ecosystem Approach as developed under the CBD to land- and soil-related matters. UNEP recognises deficits in the scientific and advisory processes of existing multilateral environmental agreements, such as poor inter-linkages between these agreements (linkage gap), poor management of data (data gap) and lack of support for implementation (impact gap).

Coherence between the agreements needs to be enhanced through commonalities in scientific and advisory processes, with benefits from assess-

ments such as the Millennium Ecosystem Assessment, the UNEP Science Initiative, and the Assessment of Agricultural Science and Technology for Development.

Options for better integration of soil issues in multilateral environmental agreements include:

- closer co-operation on land and soil issues amongst existing advisory bodies,
- a mandate for an existing advisory body to take the lead in encouraging collaboration, and
- establishment of a new independent advisory body on land/soil protection and management.

Since soil is not perceived as a global common, no sufficient international framework on soils exists, although widespread references to soil issues can be found in international environmental agreements. While overlap and competition with UNCCD should be avoided, discussions on a new instrument could include a framework treaty and a protocol to an existing treaty. Unfortunately, there is a perceived reluctance among the international community regarding new international bodies. Increased emphasis at the national level is therefore an important complement to any international approach. Therefore, the

IUCN Sustainable Soils Working Group addresses deficits in national instruments through its initiative for national soil policies and legislation.

Experiences in the EU

From an EU perspective, Luca Montanarella described ongoing efforts to better address the manifold challenges with regard to sustainable use of lands. A coherent approach to soil protection in Europe is just beginning. Policy-relevant features call for local perspective, prevention and precaution, anticipation, protection and environmental liability. An EU strategy "Towards a Thematic Strategy for Soil Protection" is currently under development. It will include elements like soils as multi-functional entities that require horizontal cross-sectoral policy guidance (between agricultural policy, water policy and waste policy). It will also be knowledge-based and therefore include a European Soil Information System and a Soil Monitoring Directive. Suggestions for progress are: (a) improve policy-relevant soil information, (b) implement existing legislation and multinational environmental agreements, (c) monitor the impact of existing legislation on soil protection, and (d) develop (if necessary) specific legislative instruments for soil protection.



Far left:
Experimental plots for testing agroforestry systems in Mae Muang Luang, northern Thailand.
Photo by Hans Hurni

Left:
Lupine plants used as green manure, Bolivia.
Photo by Martin Moll

All these elements are still to be defined in the EU Thematic Strategy for Soil Protection. An initial framework has been provided by the recent revision of the Common Agricultural Policy that has put soil protection at the centre of good agricultural practices.

The EU also plans to expand its assessment activities beyond the boundaries of the EU towards northern Africa, the Near East, and Eastern Europe and the CIS countries.

Experiences from Germany

Joachim Woiwode summarised the German experience in matters of soil policy. Within a framework of ecological and sustainable land management, soil must remain able to fulfil its different functions. The removal or reduction of existing soil pollution, and remedial soil conservation, are important areas of policy. New soil damage should be avoided as much as possible. The objectives and principles of soil conservation must be integrated in all policies. Therefore, comprehensive exchange of knowledge and practical experience between scientists, planners, administrators and politicians is indispensable. Bearing all this in mind, the German approach is built in particular on the Federal Soil Protection Act and the Federal Regional Planning Act. The purpose of the Soil Protection Act is

to protect or restore the functions of the soil on a permanent, sustainable basis. Actions to this end should include prevention of harmful soil changes; rehabilitation of the soil, of contaminated sites and of waters contaminated by such sites; and precautions against negative impacts.

The Regional Planning Act provides the organisational framework for spatial planning in Germany. It is specified by legal provisions, programmes and plans within the German Laender and regions. Note: Politicians and administrators need methods and parameters based on scientific and practical efforts that can be handled easily and that indicate the success or non-success of activities and measures, as well as failure.

The issue of an Intergovernmental Panel on Land and Soils (IPLS)

The need for a new Intergovernmental Panel on Land and Soils (IPLS) is based on the fact that no single binding multilateral agreement at global level focuses specifically on soil degradation, soil protection and sustainable land management (SLM). There have been some attempts to develop initiatives for a global soil convention (<http://www.soil-convention.org/english.htm>) by private organisations and NGOs, but no formal steps have been taken so far in this direction by any country.

Interrelated global environmental problems, however, require international coordination of global change research, which is a prerequisite for sustainable development. The IPCC has fostered international policy development, awareness and debate, as well as monitoring and research efforts. An Intergovernmental Panel on Land and Soils (IPLS) was advocated by Hartmut Grassl because: (a) soil degradation lasts longer than anthropogenic climate change, (b) wrong land uses practices cause net soil losses and lead to migration, (c) successful methods/techniques need to be compiled and communicated, and (d) political decisions are more likely if sound scientific assessment is available. At UNCCD COP-5 (2001) a proposal by developing countries (G77 and China) to explore the possibilities of establishing such a panel failed to gain sufficient support. The speaker also urged a reform of the UN in relation to environmental issues.



International experiences in sustainable land management

The Rio Conventions

The Framework Convention on Climate Change (UNFCCC) addresses the sources of greenhouse gases and sinks, related to land use and land use changes (agriculture and forestry). The Convention promotes sustainable management, conservation, and enhancement of carbon sinks and reservoirs in developing countries. It also promotes cooperation in preparing for adaptation to climate change, including impacts on land. The Kyoto Protocol fosters conservation and expansion of carbon storage above and below ground, through accounting of net changes in greenhouse gas emissions from afforestation, reforestation and deforestation, and through management of forests, cropland, grazing and revegetation. Potentially, this convention is therefore of great importance to land management, as soils are important carbon sinks. The sustainable use of soils as carbon sinks is probably an opportunity not yet fully explored by soil scientists and treaty negotiations. The issue has clearly not received enough international attention.

The Convention to Combat Desertification (UNCCD) is seen as the enabling framework for countries (mostly in semi-arid regions) to work on soil conservation and sustainable land manage-

ment. Its Committee on Science and Technology assesses desertification and research in land degradation, and develops methodologies for assessing poverty and land degradation, including monitoring and early-warning systems for desertification. Through its thematic focus, it is the convention with the closest potential connection to the land issue. However, its geographical focus is not global in the sense that it covers all terrestrial ecosystems. GEF has become the main funding mechanism for UNCCD through its Operational Programme No 15 (Sustainable Land Management). This is an acknowledgement of the importance of land issues on the international level.

Sustainable land management is also relevant to the Convention on Biodiversity (CBD). The framework for implementing CBD is a strategy for the integrated management of land, water, and living resources. The approach encompasses human as well as ecological perspectives ("ecosystem approach"). As a current activity of special importance related to sustainable land management, Michael Stocking presented the FAO International Soil Biodiversity Initiative. Soil biodiversity has been identified as an area requiring particular attention, under the programme of work on agricultural biodiversity of the Conference of the Parties

(COP) to the Convention on Biological Diversity (CBD). The Soil Biodiversity Initiative has the following objectives:

1. Sharing of knowledge and information and awareness raising
2. Capacity building, to develop and transfer knowledge about soil biodiversity and ecosystem management into practices used by farmers
3. Strengthening collaboration among actors and institutions, and mainstreaming soil biodiversity and biological management into agricultural and land management and rehabilitation programmes.

Land degradation is one of the focal areas in the Global Environment Facility (GEF), the funding mechanism for the multilateral environmental agreements mentioned here. Anna Tengberg provided insight into GEF's programmes. Activities addressing land degradation are funded primarily through the operational programmes (OP) under this focal area, in particular OP 15 (on Sustainable Land Management) and OP 12 (on Integrated Ecosystem Management). As a cross-cutting issue, land management is also funded through several operational programmes under the biodiversity and the international waters focal areas. GEF is a co-financing agency that provides "new and additional" funds to address global environmental



Far left:
The carbon sequestration potential of soils is substantial when soil organic matter is increased. Below-ground organic carbon storage capacity is more than double the above-ground capacity. Aachen, Germany.
Photo by Silvia Lazar

Left:
Scarce vegetation resources in the dry highlands near Amran, Yemen.
Photo by Hans Hurni

issues and encourages partnerships by bringing together multiple sources of funding for projects.

Under OP 15, especially capacity building, on-site investment and targeted research can be funded. OP 15 aims at mitigating the causes and negative impacts of land degradation on ecosystem stability, functions and services through sustainable land management practices, to improve people's livelihoods and economic well-being. GEF's implementing agencies include the UNDP, UNEP, and the World Bank.

Synergies between the conventions

This issue was addressed by several speakers. Luca Montanarella sees the soil organic carbon pool, one of the major global carbon pools (estimated 1500 Pg), at the core of these conventions, making it highly relevant to the UNFCCC. But soil organic carbon is also the major pre-condition for life in soils, and therefore there is a close link between soil organic carbon levels/quality and biodiversity in soils. This aspect therefore directly concerns the UNCCD. Finally, soil organic carbon is a good indicator of desertification processes, since it is closely linked to temperature and humidity. Hence there are a number of implications within the UNCCD process.

Markus Giger pointed out that integration of the objectives of the three conventions must be realized at the local level and benefit local communities. Synergies must therefore be realized at this level. More sustainable and efficient use of energy from biomass – a substitute for fossil fuels – is an example of a promising intervention strategy.

Parties to these Rio Conventions have repeatedly pointed out that there is a need for firmer convergence of the strategic approaches that the various interested parties have hitherto pursued, particularly at the individual country level. Moreover, the need was also recognised for Parties to focus more on a broader framework that includes a complex set of issues encompassing desertification and land management, biological diversity, climate change, and socio-economic development, among others. In particular, in order to address the intertwined issues of poverty eradication, sustainable development and environmental security more concretely, the three Rio Conventions expressed the need to join efforts to avoid addressing these issues separately.

In order to further strengthen the links between the three Rio Conventions, a specific workshop was organ-

ised in 2004 in Viterbo, Italy, entitled "Forests and Forest Ecosystems: Promoting Synergy in the Implementation of the Three Rio Conventions". A similar initiative is urgently needed for soils and could be the first step towards a more coherent approach to soil protection at the global level. The IASUS initiative of IUSS could play a key role in this respect in the future.

Conclusions

Winfried E.H. Blum summarised and commented on the discussion so far. He emphasised that "sustainable land management is a political and not a scientific issue". Sustainable land management requires trying to "harmonise" all land uses in a given area and avoiding or minimising irreversible impacts. Science, however, can contribute to sustainable land management by addressing the reasons for (and problems of) land degradation in different regions, using inter- and multidisciplinary methodologies to develop relevant scenarios for politics and decision-making. Blum underlined the need to develop more policy and decision-making by means of interdisciplinary and multidisciplinary co-operation.



Global challenges for sustainable land management

A panel discussion among the contributors to the Eurosoil Symposium was organised, guided by three main questions. The participants in the symposium were also invited extensively to express their opinions on each of the main questions.

Question 1:

What should be done to foster soil protection and sustainable land management on international agendas?

A general consensus emerged that a “mainstreaming” of soil issues should be achieved. As there are considerable reservations among political stakeholders at the global level about the creation of new international bodies, the panel believes that the trend is more towards making existing structures work better or enhancing their status (e.g. UNEP). The national level was mentioned as a very important entry point, as well as the experience of the EU, which is apparently very promising. Additional statements mentioned the need for better data and better communication, and for more capacity building, education, research and development. In general, there is a need for better tools to evaluate soil use and the driving forces behind soil degradation.

Question 2:

Your vision and approaches (reactive “problem-solution” vs. pro-active “innovation”)?

The panelists addressed the questions in various ways, and there was no clear consensus. However, everybody agreed that no simple solutions are available. Innovation is very important, and must be supported.

A positive approach to soils was seen as very important. It is easier to attract policy-makers and raise funds for “positive” CBD than for “negative” UNCCD. Applying valuation of an ecosystem’s goods and services to soil issues was therefore called for. Those who use ecosystem goods and services should pay, and those who maintain them should be paid. Participants also mentioned that the discussion should move to a much broader level and include questions of harmful subsidies and international trade.

The value of soils to society should be established and communicated much more clearly to the public. This would be a way of creating real interest.

Question 3:

What will you do over the next 12 months to put soils higher on the international agenda?

Each panel member was invited in a concluding round to state what he/she would do in terms of concrete action to promote more sustainable use of soils and land.

Actions at the personal level included:

- ideas for formulating a joint, integrated and interdisciplinary research project at the European level (Blum);
- dissemination of results from an existing project (SOWAP) to the field level and the policy level in Europe (van Lynden);
- realisation of funding for a project prepared for GEF (the LADA Project) and its subsequent implementation, thus strengthening the scientific basis of land degradation and desertification (Tengberg);
- putting particular emphasis on the costs of soil/land degradation and on the benefits of soil/land conservation (rehabilitation) using the WOCAT database, in order to have greater impact on economically-driven decisions relevant to land use at institutions like the WTO (Giger);



Far left:
Children are part of the future – and of the earth where they sit and on which they subsist. Bikanhalli, Karnataka, India. Photo by Felicitas Bachmann

Left:
After 2-3 cycles of slash and burn cultivation the soils are exhausted of nutrients. On slopes, the new scrub vegetation is often insufficient to anchor soils, making erosion and landslides a problem. East coast of Madagascar. Photo by Andreas Kläy

- pursuing establishment of an International Panel on Lands and Soils (Grassl);
- formulating a paper on land degradation in a highly rated scientific journal (Stocking);
- emphasising an approach that values ecosystem goods and services, functions and values, thereby advancing soil issues beyond conventional approaches, and ensuring good links between the scientific community and international agendas in these matters (Mackensen);
- trying to expand knowledge transfer as an EU member country within (and outside) the EU, and trying to learn from our experiences and failures (Woiwode);
- strengthening the role beyond the 2005 EU work programme as an EU soil institution because of the EU's global responsibility, and in order to remain visible at the core of soil protection, even at the global level (Montanarella);
- using imagination, relevance and communication to promote soil issues and put them higher on the global agenda (Dent);
- better interaction between the global and local levels, to provide effective support for farmers in difficult situations, allowing improvement of their soils, making them more viable and resilient and

better suited for agricultural production, and perhaps also for environmental services, which these soils provide to the global community (Hurni).