INTERNATIONAL WORKSHOP

LOCAL DEVELOPMENT AND CONSERVATION & DEVELOPMENT OF COASTAL ZONES ON THE EASTERN COAST OF SOUTH AMERICA

Florianopolis, Brazil, 04 - 10 December 2000
The Newsletter **South-South Perspectives** is published by the **South-South Co-operation Programme**. It aims to maintaining links between the participants in the programme and to disseminating information related to research on Biosphere Reserves about topics such as (i) the prevailing conservation and resource use models and, (ii) the means to improve traditional practices and orientations of applied research in order to increase and made sustainable the use of biodiversity and supply better life conditions for local populations in buffer and transition areas.

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The Programme on “South-South Co-operation” is on Internet: [http://www.unesco.org/mab/south-south/index.htm](http://www.unesco.org/mab/south-south/index.htm)
INTRODUCTION

by Peter BRIDGEWATER
Director
Division of Ecological Sciences
Secretary
Man and the Biosphere Programme (MAB)

The South-South Co-operation Programme on the Humid Tropics presently in its 9th year of existence has changed a lot since the last newsletter has been published. Although its past actions concentrated on connecting scientists and managers working in the humid tropics of Latin America, Africa and Asia, today it covers as well subtropics and dry regions.

The title has changed to “South-South Co-operation Programme”, which, as in the past, aims to promote the knowledge for the environmental and socio-economical sustainable uses of natural resources.

The most important event in the past year was the holding of the International Conference in Florianopolis in December, of which a substantive summary is included in this issue.

Several South-South Working Documents have also been produced or are in the pipeline, and a series of international meetings on coastal zone management and on distance education will be held in the course of the year 2001.

The Florianopolis-meeting reflected on where the South-South Co-operation Programme stands. The meeting reiterated the strong commitment of the organising institutions UNESCO, UNU, and TWAS to continue its efforts. Also the association with partner institutions, such as the University of Florianopolis and UNAMAZ proved very fruitful. Particularly with UNAMAZ three books on sustainable development of the Amazon region have recently been published.

This South-South Co-operation Newsletter’s gives the highlights of the Florianopolis-meeting and I would like to use this opportunity to underline the support that the UNESCO Man and the Biosphere Programme maintains to this South-South Co-operation, and to encourage all actors involved to continue their active and forward-looking collaboration.

Paris, May 2001
INTERNATIONAL WORKSHOP
LOCAL DEVELOPMENT AND CONSERVATION &
development of coastal zones
on the eastern coast of south america
Florianopolis, brazil, 04 - 10 december 2000

ORGANIZATION
UNESCO – Division of Ecological Sciences / Man and the Biosphere Programme (MAB) / South-South Co-operation Programme
Universidade Federal de Santa Catarina (UFSC) / Programa de Pós-Graduação em Sociologia Política / Núcleo de Meio Ambiente e Desenvolvimento (NMD)
Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (SEBRAE)

AGENDA

04/12 - Morning - Seminar The University and Local Development

09:00 – 09:30 - Opening of the meeting
09:30 - 10:45 - Conference The role of universities as stakeholders of local, participatory development
Ignacy Sachs (Ecole des Hautes Etudes en Sciences Sociales / EHESS, France)
Comments by Vinicius Lummertz (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas / SEBRAE, Brazil)
10:45 - 11:00 - Coffee Break
11:00 - 12:00 - Debate

04/12 - Afternoon - Seminar The University and Local Development (sequence)

15:00 - 16:30 - Conference SEBRAE’s approach of collective entrepreneurship in protected areas
Osvaldo Viegas (SEBRAE, Brazil)
16:30 - 16:45 - Coffee Break
16:45 - 17:15 - Case studies
Interdisciplinary and integrated management of environmental projects/programmes - Carlos Alberto Sampaio (Fundação Universitária de Blumenau / FURB, Brazil)

17:15 - 18:00 - Debate

04/12 - Evening

19:00 - 20:30 - Annual Meeting of the Brazilian Teaching and Research Association on Ecology and Development / APED

05/12 - Morning - Workshop Strengthening Co-operation Networks for the Building of Local Agendas 21

09:00 - 10:15 - Conference Nine years of South-South Co-operation: Where do we go in the next three years?
Miguel Clüsener-Godt (UNESCO-MAB, France)
Comments: Ignacy Sachs (Ecole des Hautes Etudes en Sciences Sociales / EHESS, France)
10:15 - 10:30 - Coffee Break
10:30 - 11:15 - Case studies
Elaborating an integrated and participatory model for ecodevelopment - Normand Brunet (Université du Québec à Montréal / UQAM, Canada),
International co-operation for the building of local Agendas 21: The experience of the Ibero-American Biosphre Reserve Network - Eduard Müller (Universidad para la Cooperación Internacional / UCI, Costa Rica)
11:15 - 12:00 - Debate
05/12 - Afternoon - Workshop Strengthening Co-operation Networks for the Building the Local Agendas 21 (sequence)

15:00 - 16:30 - Round-Table Towards a South-South co-operation programme on distance education for ecodevelopment
Eduard Müller, Andrea Ballestero and Edgar Castillo (Universidad para la Cooperación Internacional / UCI, Costa Rica)

16:30 - 16:45 - Coffee Break

16:45 - 17:15 - Case studies
Clovis Ultramari and Rosemarie Rothen de Sá (Universidade Livre do Meio Ambiente / UNILIVRE, Curitiba, Brazil)

17:15 - 18:00 - Debate

06/12 - Morning - Workshop Conservation and Development of Coastal Zones on the Eastern Coast of Latin America

09:00 - 09:30 - Opening conference
Miguel Clüsener-Goed (UNESCO-MAB, France)

09:30 - 10:30 - Round-Table Integrated and decentralized management of coastal zones: The Brazilian experience
Maurício André Ribeiro and Márcia Fernandes Coura (Ministério do Meio Ambiente, dos Recursos Hídricos e da Amazônia Legal / MMA, Brazil).

10:30 - 10:45 - Coffee Break

10:45 - 11:30 - Case studies
The Train-Sea-Coast Programme in Brazil: Capacity-building for coastal zones development in Latin America - Milton Asmus (Fundação Universitária de Rio Grande / FURG, Brazil)

11:30 - 12:00 - Debate

06/12 - Afternoon - Workshop Conservation and Development of Coastal Zones on the Eastern Coast of Latin America (sequence)

15:00 - 15:45 - Conference Conservation of bio and cultural diversity by means of ecodevelopment:
The Indian experience
Shekhar Singh (Indian Institute of Public Administration, India)

15:45 - 17:15 - Round-Table Assessment of projects and experiences of bio and cultural diversity conservation by means of ecodevelopment in the biosphere reserves network (Mexico and Costa Rica)
Conservation through ecodevelopment: The Mexican experience - Patricia Moreno-Casasola (Instituto de Ecología, Mexico)
A review of Costa Rica’s experience in conservation through ecodevelopment - Eduard Müller, Andrea Ballestero and Edgar Castillo (Universidad para la Cooperación Internacional / UCI, Costa Rica)

17:15 - 17:30 - Coffee Break

17:30 - 18:00 - Debate

07/12 - Morning - Workshop Conservation and Development of Coastal Zones on the Eastern Coast of Latin America (sequence)

09:00 - 10:15 - Sequence of the Round-Table
Assessment of projects and experiences of bio- and cultural diversity conservation by means of ecodevelopment in the biosphere reserves network (Colombia, Brazil, Argentina)
The experience of the Corporation for Sustainable Development of the Archipel San Andrés, Providencia y Santa Catalina in Colombia - Henny Taylor Florez (CORALINA, Colombia)
The experience of the Mata Atlântica’s Biosphere Reserve in Brazil - Clayton F. Lino and João Lucílio Albuquerque (Conselho Nacional da Reserva da Biosfera da Mata Atlântica, Brazil)
The experience of the Montevideo Group’s Regional Postgraduate Programme on Environment - Leonardo Calo (Universidad Nacional de La Plata, Argentina)
A review of biosphere reserves management in Argentina - Alicia Toribio (MAB Committee - Argentina)

10:15 - 10:30 - Coffee Break

10:30 - 11:00 - Summing-up
Eduard Müller (Universidad para la Cooperación Internacional / UCI, Costa Rica)

11:00 - 12:00 - Debate

07/12 - Afternoon - Workshop Conservation and Development of Coastal Zones on the Eastern Coast of Latin America (sequence)

15:00 - 16:30 - Round-Table Community-based natural resources management: Methodological issues
Watershed management: Creating a social structure based on production, conservation and environmental education - Patricia Moreno-Casasola (Instituto de Ecología A.C., Mexico)
Key aspects in participatory management of coastal ecosystems in Northeastern Brazil - Henrique O.M. de Barros (Universidade Federal Rural de Pernambuco / UFRPE, Brazil)
Public policy-making, environmental legislation and conflicts involving natural resources use: Towards integrated management of mangroves in Paranaguá Bay (Paraná State, Brazil) - Paulo Lana (Universidade Federal do Paraná / UFPR, Brazil)

16:30 - 16:45 - Coffee Break

16:45 - 17:45 - Case studies

Environmental education in coastal zones and the university: The experience of the UNIVALI - José Matarezi (Universidade do Vale do Itajai / UNIVALI, Brazil)

Participatory management of coastal zones in Santa Catarina: The case of Campeche’s Beach - Tereza Cristina Barbosa (Universidade Federal de Santa Catarina / UFSC, Brazil)

Sustainable agricultural development on the coastal zone of Rio Grande do Sul State, Brazil - Julio Centeno da Silva (Empresa Brasileira de Pesquisa Agropecuária / EMBRAPA-RS Brazil)

Model building techniques for integrated coastal management - Milton Asmus (Fundação Universidade Federal de Rio Grande / FURG-RS, Brazil).

Management of Brazilian fresh water fish stocks: Flexible concepts are needed - Uwe Schulz (Universidade do Vale do Rio dos Sinos / UNISINOS-RS, Brazil)

Prospects for sustainable aquaculture management on Santa Catarina’s coastal zone – Luís Vinatéa Arana (Universidade Federal de Santa Catarina, Brazil)

17:45 - 18:00 - Debate

Islanders of the South-eastern Brazilian coast: Livelihood, natural resources and resilience - Alpina Begossi (Universidade Estadual de Campinas / UNICAMP, Brazil)

Learning from fishers: The case of the Ibiraquera Lagoon in Santa Catarina - Cristiana Seixas and Fikret Berkes (University of Manitoba, Canada)

11:15 - 11:45 - Case studies

Caiçara livelihood: Knowledge, use of natural resources and diet - Natália Hanasaki (Universidade Estadual de Campinas / UNICAMP, Brazil)

Co-manager of traditional fisheries at Lagoa dos Patos in Southern Brazil - Daniela Kalikoski (University of British Columbia, Canada)

11:45 - 12:00 - Debate


15:00 - 15:30 - Terms of reference

Miguel Clüsener-Godt (UNESCO-MAB, France)

15:30 - 17:00 - Comunications

Shekhar Singh (Indian Institute of Public Administration, India), Patrícia Moreno-Casasola (Instituto de Ecología A.C., Mexico), Eduard Müller (Universidad para la Cooperación Internacional, Costa Rica), Luís Aragón (Universidade Federal do Pará / UFPA, Brazil)

17:00 - 18:00 - Debate, Summing up and Closing of the meeting

Miguel Clüsener-Godt (UNESCO-MAB, France), Eduard Müller (UCI, Costa Rica) and Paulo Freire Vieira (UFSC, Brazil)
International Workshop on Local Development and Conservation & Development of Coastal Zones on the Eastern Coast of South America

by

Paulo Freire Vieira and Miguel Clüsener-Godt

As part of the follow-up activities of the 4th Interregional Conference South-South Co-operation on Environmentally Sound Socio-Economic Development in the Humid Tropics: 8 Years of South-South Co-operation, held at the Institute of Ecology (Xalapa, Mexico) on May 1999, the INTERNATIONAL WORKSHOP ON LOCAL DEVELOPMENT AND CONSERVATION & DEVELOPMENT OF COASTAL ZONES ON THE EASTERN COAST OF SOUTH AMERICA took place in Florianópolis, State of Santa Catarina, South-Brazil, from 04 to 10 December 2000. It was organised and sponsored by the United Nations Educational, Scientific and Cultural Organisation (UNESCO), through the Division of Ecological Sciences, in partnership with the Research and Teaching Unit on Environment & Development of the Post-Graduate Programme on Political Sociology of the Federal University of Santa Catarina (NMD-UFSC), the Brazilian Teaching and Research Association in Ecology and Development (APED) and the Serviço Brasileiro de Apoio às Micro- e Pequenas Empresas (SEBRAE).

This meeting was hosted by the Post-Graduate Programme on Political Sociology of the Federal University of Santa Catarina and gathered 34 scientists and managers from seven countries, involved with the task of comparing experiences of decentralised and participatory management of natural resources in coastal zones in Latin America (Argentina, Brazil, Canada, Colombia, Costa Rica and Mexico) and also in India. Approximately 120 persons (mainly teachers and scientists attached to the network of public and private universities operating in South Brazil, undergraduate and graduate students, and representatives of governmental and non-governmental sectors involved in socio-environmental issues) have been actively engaged in the discussions.

Proposals

The workshop was designed mainly to foster the exchange of recent experiences in creating sustainable livelihoods and alternative development paths informed by the Agenda 21 in coastal zones on the eastern coast of Latin America. This intercultural dialogue should inform the search for a long term, comparative research and training programme on conservation of the bio and cultural diversity in coastal ecosystems in this region by means of ecodevelopment.

From the organiser’s point of view, the network of biosphere reserves existing in this region could be used as a sort of creative laboratory for decentralised, community-based management of natural resources and administration of protected areas, in tune with the guidelines of the ecodevelopment approach (Sachs, 1980, 1981). In this regard, the workshop was expected to provide a broad basis for reflections concerning the expansion of the actual focal point of the South-South Co-operation Programme - namely the rain tropics - , so as to have participants benefiting from the widest-ranging experience available and, consequently, to learn from the experiences of each other and define new lines of action for the next years.

Indeed, to tackle the challenge of integrated, simultaneously preventive and proactive coastal management in Latin America and the Caribbean, we can make use of a wide range of experiments in biodiversity conservation made in partnership with local communities in several regions of the world. Many of them have been diffused in the context of several UNESCO’s programmes, for instance the Programme on Man and the Biosphere and IBSICA. The Ibero-American Biosphere Reserve Network constitutes another source of relevant initiatives related to (1) local level, participatory assessment of coastal ecosystems and (2) the experimental design of integrated production systems for sus-
tainable development of these areas. This includes, for instance, agro-forestry; aquaculture and small-scale, decentralised industrialisation based on a comprehensive use of terrestrial and aquatic biomass as food, fuel, fertiliser and food processing and non-food agro-industries; ecotourism and agrotourism. At the same time, recent advances in domestic biotechnology research offer a promising point of view for the design of development alternatives (Sachs, 1993; Vieira et al., 1998).

Furthermore, innovative moves towards the implementation of rigorous local level, participatory assessments of biodiversity resources and their conventional uses, in tune with the general objectives stipulated in the Convention on Biological Diversity can be found nowadays in the action-research networks operating in the Indian context, aiming to strengthen and enlarge the so called process of People’s Biodiversity Registers (Gadgil, 1999). In Gadgil’s more recent proposal of Involving People in Millennium Assessment of the State of World’s Ecosystems, relating case studies to be developed in selected countries (for the moment, India, Brazil, South Africa, Turkey, Canada and Sweden) we can find new inputs for ecodevelopment research both at the community and district levels (Gadgil et al., 2000).

The main components of such new entry point for comparative, policy-oriented analysis of the history and current status of community-based conservation efforts include (a) national and regional ecological history, focusing on social thought and action relating to the conservation of species and ecosystems; (b) current status of community-based conservation, including an assessment of the people’s initiatives and of the potential for community involvement in conservation, envisaged in laws, policies and government programmes; (c) detailed analysis of specific sites (biosphere reserves or other protected areas) in different countries, with cross-country comparative analysis; and (d) lessons to be learnt regarding methods and desirability of community-based conservation. Special focus could be set on the relevance of historical analysis to the understanding and handling of contemporary conservation dilemmas and the value of cross-cultural analysis.

In this regard, the workshop’s official agenda contemplated conferences, seminars, round-tables and short communications focusing on the following five general topics: (a) the role of universities as stakeholders of local ecodevelopment strategies in coastal zones, (b) assessment of projects and ongoing experiences in conservation of biodiversity and cultural diversity by means of ecodevelopment in the Latin American and Caribbean network of biosphere reserves, (c) the need to put into practice innovative methods for participatory local level assessments of life-support systems in coastal zones, (d) conditions for strengthening international cooperation in the field of distance education for ecodevelopment in the context of the South-South Co-operation Programme, and (e) the perspectives and challenges to be confronted in the search for a new agenda for UNESCO’s South-South Co-operation Programme (2201-2003). The official working schedule included a two-days field visit through interesting sites in Santa Catarina’s southern coastal zone.

**Implemented activities**

For methodological purposes, the meeting was divided into two parts (see Meeting Agenda enclosed). The first consisted of conferences and discussions focusing on two related topics, namely: the role of universities as stakeholders of local development, and the concept of collective entrepreneurship proposed in the context of SEBRAE’s activities of assisting one thousand municipalities in designing local level, integrated and participatory development plans.

Following this series of presentations, the second part of the meeting consisted of several sessions aimed at identifying and assessing ongoing research and training activities in the field of conservation by means of ecodevelopment in coastal ecosystems and also preparing an outline of a new joint strategy for regional and inter-regional cooperation.

**Achievements and Prospects**

The workshop witnessed the launching of several ideas and recommendations designed to give fresh impetus to the search for expansion, integration and institutional strengthening of the South-South Co-operation Programme in the next years. The participants acknowledged that the limited experience of the Programme points once more to the crucial importance of overcoming fragmentation.
in teaching and research activities and of rethinking on-going strategies for dissemination and use of scientific and technical information in integrated management ofbiosphere reserves.

Considering the contributions that have been made in tune with the focal point of the Programme - namely *natural resources conservation in the network of biosphere reserves by means of eco-development* - have increased in the last years in intensity, cogency and depth, it was suggested and unanimously approved that the South-South Programme should be called, from now on, UNESCO’s *South-South Co-operation Programme on Ecodevelopment*.

In this regard, the rather controversial concept of ecodevelopment is used here to denote a knowledge-intensive, simultaneously preventive and proactive kind of environmental policy oriented to reducing the social debt in the South without incurring into ecological debt. It is thus concerned basically (1) with the assessment of underlying structural conditions giving rise to imbalances in man-environmental relations and (2) with the design of long term innovative «win-win» strategies of social change, transforming the tropical environment into a permanent comparative advantage for a modern biomass-based civilisation. Giving a new and vigorous impulse to the search of non-mimetic and anti-reductionist development strategies for the South is perceived by the members of the South-South Programme as a possible and coherent starting point for an encompassing social response to a crisis in civilising patterns.

*Complex systems design* can be seen as the central concern of this operational or «problem-solving» concept, where emphasis is placed on the need to modify the planner’s field of vision in order to tackle comprehensively, taking into account such diversified issues as new consumption patterns and integrated production systems, changing values and life-styles, equity and governance. Both *decentralisation and centralised synthesis* are considered complementary instances in establishing an effective institutional apparatus for future-oriented decisions related to development strategies: the former reinforces the utopia of rationalised co-management of society, and the latter provides the capabilities for coping with widespread interdependencies, uncertainties and long term systemic effects (Sachs, 1980, 1981, 2000; Dag Hammarskjöld Foundation, 1975; Vieira & Weber, 1997).

Historically, we live in a period of growing uncertainties concerning both our understanding of development-environment issues and our approaches to dealing with realistic alternatives to dominant «react and cure» strategies and instruments. Against the background of the tragic constraints imposed nowadays by the economic and cultural globalisation trends upon the conditions of the poor and underprivileged sectors of contemporary societies (in both hemispheres), it was acknowledged that the South South Co-operation Programme shall thus strengthen its potential to provide sound technical information, new educational strategies and an efficient networking space in trying to counteract the condition of *structural violence* (Johan Galtung) implicit in the current dynamics of national and international systems (Vieira, 2001). In this sense, it could offer relevant contributions to respond both to the short and medium term needs of the decision makers (individuals and institutions), as well as to undertake research efforts that could be rigorous and challenging, inducing at the same time attitudes and creative responses oriented to the consolidation of a genuine *culture of non-violence in a development perspective* (UNESCO, 1996).

At the same time, the need was acknowledged to (a) to intensify the mediator role of the South-South Co-operation Programme on Ecodevelopment in the search for regular funding for selected teaching, research and institutional capacity-building projects; (b) to make a more intensive use of the modern information and communication technologies, both to counteract the growing complexity involved in the efficient linking of research and teaching units and to advance more ambitious, regional and inter-regional research and teaching projects in tune with the Agenda 21; and (c) to promote a better integration of research and teaching initiatives related to the ecodevelopment approach in the South set in motion by countries of the North.

The ideals consubstantiated in this new image of the Programme constitute thus a formidable challenge, that seems to depend directly on the existence of adequate inducing, co-ordinating and evaluating mechanisms, viewed simultaneously at four levels of integration: (a) the university level; (b) the inter-university, regional level; (c) the scientific-technological system, at the national level; and (d) the international level. It becomes evident that the
prospect of consolidating this sort of web of teaching and policy-oriented research webs in the long run should become a priority target for the evolution of the Programme.

Given the actual multiplicity of North-South linkages in the field of community-based conservation of natural resources, the participants of the meeting have also highlighted the need to assess more carefully the strengths and weaknesses of the integrating and co-ordinating efforts that have been made in the last years by international organisations committed to the development of the South-South Co-operation Programme.

At last, in spite of the pertinence and legitimacy of the Programme’s starting point, emphasising the rain tropics as a biogeographical region for the exchange of experiences in designing sustainable livelihoods and development paths informed by the Agenda 21, the participants acknowledged the need to expand the Programme’s scope to focus the problematique of conservation through ecodevelopment in coastal zones.

As a tentative review of the main topics included in the Programme’s new agenda (2001-2003), we can be mention:

1) To prepare a long term, comparative research and training project on the subject of conservation of bio- and cultural diversity by means of ecodevelopment in coastal zones of the participant countries. As a first step oriented towards this goal, it was recommended (a) to identify with greater precision up-dated research and training activities related to the use of participatory methods for local level data production and to the elaboration of institutions of co-management of coastal ecosystems in line with the ecodevelopment approach, (b) to take into account the actual dynamics of teaching and research inter-regional programmes and scientific networks that have clear interfaces with this goal, for instance UNESCO’s IBSICA, The Millennium Ecosystem Assessment (World Resources Institute, 1999), the International Association for the Study of Common Property (IASCPC), UNAMAZ and the University Association of the Montevideo Group; and (c) to promote a more intensive use of Internet to establish databases for regular exchange of scientific and technical information and to identify common points of interest and new terms of reference for an integrated research strategy.

2) To organise, carry out and provide the logistic support for a long term training programme in Distance Education on Ecodevelopment in tune with the guidelines of the 1999 report (UCI, 1999). Under the leadership of both UCI and the UFSC’s Research Unit on Environment & Development, a one-year pilot-project addressed to the needs of community leaders in the participating countries will be carried out during 2001.

3) To support the implementation of an international, comparative research programme on Biodiversity, Cultural Diversity and Natural Resources Management - The Relevance of Conservation Cultures, under the direction of Dr. Shekhar Singh. Four countries have been selected for the programme’s first phase, namely India, China, Mexico and Brazil. Considering that some of the difficulties found in resource conservation and management for ecodevelopment seem to emerge from the isolation of the concept of conservation from the cultural dimensions of human civilizations, the core idea is to elaborate the concept of conservation cultures and to use it as the focus for the reconceptualisation of bio and cultural diversity management strategies. More specifically, in tune with the study carried out by Singh et al. (2000), this research programme proposes to (a) compile and assess experiences, values and concepts relevant to the biodiversity-cultural diversity configuration; (b) survey and study significant historical and contemporary examples of conservation cultures in the four selected countries; (c) assess prevailing strategies for biodiversity conservation in these countries, in terms of their sensibility to the biodiversity-cultural diversity configuration; and (d) formulate concrete recommendations for promoting biodiversity conservation through strengthening its linkages with cultural diversity. The educational value of such a synthesis of community participation in natural resources conservation is evident as it becomes necessary to prepare the actual and future generations for a shared evolution on the basis of a systematic exploration of the ecosystems/cultures grid, whereas
contemporary culture is posited on the paradigm of man’s domination over nature.

4) Aiming at strengthening the ongoing efforts in disseminating knowledge of comparative research and producing didactic materials based on selected case studies, to prepare a volume of proceedings, providing the integral re- production of the papers presented in the workshop and a selected contribution of Dr. Shekhar Singh. This volume will be organised by Dr. Paulo Freire Vieira and published under the auspices of APED, with the support of SEBRAE, as part of the series of collected studies entitled Development, Environment and Society. It will also be available on Internet.

5) In the context of the SEBRAE and UNDP jointly project on the future of small-scale production in Brazil (to be published in 2002 as a Human Development Report), under the coordination of Dr. Ignacy Sachs, the Research Unit on Environment and Development will co-organise in Florianópolis, from 6 to 7th November 2001, a meeting aiming to reassess the socio-economic development path of Santa Catarina, in which small-scale production seems to play a significant role. In this regard, through five papers written by leading experts on this subject, the focus is going to be set on the following issues: (a) the rural world (family strategies of livelihood production and their linkages with agribusiness, assessment of agrarian problems; rural non-agricultural employment, the role of public institutions), (b) the model of small-scale, decentralised (diffused) industrialisation, (c) the role of associativism and cooperativism, (d) the university, research and high-tech small-scale start-ups (technopoles and enterprise incubators), and (e) the impacts of tourism.

REFERENCES


Collective entrepreneurship in protected areas –
the SEBRAE approach

Osvaldo Viégas
Technical Director, SEBRAE

The Brazilian Service for Support to Micro and Small Enterprises in Brazil is a private, non-profit institution. Its mission is to work in a strategic, innovative and pragmatic way, contributing to improve conditions for micro and small enterprises and help them evolve in a sustainable manner, thus contributing to the development of the country as a whole.

Along Brazil’s over 8,500 km coastline, stretching along 17 coastal states, covering over 350 municipalities, together with its 12 miles of territorial waters, we find diverse natural features, such as mangroves, sandbars, dunes, estuaries, lagoons, coral reefs and Atlantic forest, together with cultural features including diverse manifestations of folklore and cultural vestiges of traditional populations, such as those of the communities of artisan fishers.

These “environmental assets” are a suitable heritage for the implementation of an effectively sustainable development process, involving not only the direct use of environmental resources, but also indirect uses, especially through tourism.

In this respect, an appropriate orientation – the role inherent to SEBRAE’s mission – for the development of ecologically correct projects, can certainly contribute to this process.

SEBRAE has a specific programme, aimed at supporting local communities in the implementation of sustainable development: the Local Integrated and Sustainable Development Programme – DLIS, previously know as the Programme for Employment and Income – PRODER.

Taking into account the existence of approximately 400 conservation units in the Brazilian coastal area, as identified by the Macro-assessment of the Coastal Zone (MMA, 1996), we found an excellent opportunity to carry out actions aimed at the development of collective entrepreneurship, focused on protected areas, through SEBRAE’s Programme for Local Integrated and Sustainable Development.

Some examples illustrate this potential: the development of tourist guides, who would monitor the preservation of Conservation Unit environments and respect for the carrying capacity of these sites, generating employment and income in the neighbouring communities is a real possibility that is already being used in some areas.

The direct use of some resources could be evaluated, provided that it is accompanied by an assessment of the impacts that may arise. This type of use would be justified, for example to cover demand for natural products by artisan communities, provided that extraction is monitored, avoiding over-exploitation of resources.

Some points need to be analysed. On the one hand, entrepreneurship and, considering collective action, we must take the use of association / cooperativism into account, endeavouring to: optimise competitive advantages, make the production scale feasible and occupy markets niches. Regarding environmental occupation we should consider, among other aspects, the optimisation of energy use, closing cycles and reducing waste generation. At all events, the big question to be answered on the basis of pilot experiments carried out through a natural scale model, is: are these experiences leading us to the sustainable use of environmental resources in protected areas, with a significant generation of employment and income?
Interdisciplinary and integrated management of environmental projects / programmes in the Ribeirão Belchior (Gaspar-SC) sub-basin

Carlos Alberto Cioce Sampaio¹ and Noemia Bohn
¹ Fundação Universitaria de Blumenau/FURG

Abstract

In an attempt to overcome the disciplinary vision of technical and academic research in the social and environmental sciences, in which the object of research is often analysed by a research worker alone, or by a team of research workers sharing the same area of knowledge, which frequently leads to conclusions that are far from the facts as they really happen, an interdisciplinary and integrated research project is proposed. This disciplinary approach could be the reason for the numerous unsuccessful attempts at studying the true reality, which is distant from the idealised one.

This project is aimed at investigating the Ribeirão Belchior sub-basin in the stretch between the communities of Carolina and Belchior Alto, both part of the Gaspar (SC) municipality. This stretch comprises the main water sources of Ribeirão Belchior and a set of waterfalls undergoing environmental impacts from local communities and tourist activities.

In order to minimise these environmental impacts, some technical projects and programmes – under the initiative of the Gaspar Municipal Prefecture, the Service for Support to Micro and Small Enterprises (SEBRAE) and the Ministry of Public Health – and scientific projects and programmes – under the initiative of the Regional University of Blumenau (FURB) / Institute for Environmental Research (IPA), the Post-Graduate Courses on Environmental Engineering and Regional Development and the Committee for the Hydrographic Basin of the Itajaí River – are being linked for actions to be implemented, resources optimised and, above all, efforts and motivation synergies throughout the whole project for Interdisciplinary and Integrated Management of Environmental Projects/Programmes in the Ribeirão Belchior (Gaspar-SC) sub-basin.
Elaborating an integrated and participatory model for ecodevelopment in coastal zones

Normand Brunet
Université du Québec à Montréal

An interdisciplinary research group of the Federal University of Santa Catarina (Florianópolis, Brazil) is developing a Local Agenda 21 pilot project for the coastal community of Ibiraquera, in the State of Santa Catarina. Within this process, and based on the paradigm of ecodevelopment, it is proposed to elaborate an integrated and participatory model inspired from a variety of experiences and sources. Such a model could combine the strengths and try to avoid the weaknesses of different environmental planning approaches. The purpose is to contemplate simultaneously spheres such as quality of the environment, health, employment, education and culture, which are generally considered separately.

The idea of developing in Ibiraquera an ‘Ecodevelopment Laboratory’ appears as one of the leading initial guidelines for the elaboration of this model. Such an experimental process has been implemented in a rural and in an urban contexts within the Province of Québec (Canada). It promotes the co-ordination of the efforts of a wide variety of actors, an ecosystem approach, the participation of citizens in the elaboration of projects and in decision-making processes, and above all a way for an ‘experimental and collective invention’ of ecodevelopment.

Among the main initial sources considered in this project also figures the model of the ZIP Committees, multi-stakeholders structures created for the environmental remediation of different Priority Intervention Zones identified along the Saint-Lawrence River, in Québec. Various other processes, such as healthy communities will also be considered carefully.

The close collaboration with the Community Council of Ibiraquera, which has already been established, is a key success factor in the elaboration and implementation of this model. Neighbouring and more distant communities could then draw examples from it.
The importance of integrated coastal and marine management in controlling socio-environmental impacts and its contribution to promoting sustainable development in Brazil

Maurício Andrés Ribeiro and Márcia Fernandes Coura

1 Ministry of the Environment, Water Resources and the Legal Amazon.
E-mail: mauricio.andres@mma.gov.br

Abstract

The Brazilian Coastal Zone, considered as National Heritage by the 1988 Constitution, covers a 8,698 km coastline and shelters a population of over 35 million inhabitants, with a population density of 88 inhabitants/km², five times the national average. It is in the Coastal Zone that 70% of the GNP is generated, with a high concentration in urban areas (covering 5 of the 9 Metropolitan Regions) of industrial activities, port, energy and tourist complexes. Such indicators characterise the importance of the region’s attraction, while making its management an enormous challenge.

The Coastal Zone covers 17 States and over 400 municipalities. Its Territorial Waters extend 12 nautical miles. In this area ecosystems of major environmental and socio-economic relevance are to be found, with the largest area in the world of continuous mangroves, coral reefs, sand dunes, estuaries, lagoon complexes, sandbars, plains and the greatest stretch remaining of the Atlantic Forest.

Certain places, such as metropolitan areas and the large industrial poles, require major corrective action to restore the quality of life. Massive investments in environmental sanitation infrastructure (water treatment, sewage and waste) are an absolute priority. Other areas, harbouring relevant ecosystems with original characteristics, demand preventive action, aimed at increasing activities placing value on the landscape and the wealth of local culture.

In view of this situation, the Federal Government established the National Plan for Coastal Management (PNGC) through Law No. 7,661 of 16 May 1988, conceived in the framework of the Inter-Ministerial Commission for Marine Resources (CIRM) based on the National Environmental Policy and the National Marine Resources Policy, which guide this instrument for governmental action.

The PNGC, co-ordinated by the Ministry of the Environment, provides the bases for the operation of the National Programme for Coastal Management (GERCO). Its strategy is to promote environmental management, coastal and marine resource use planning, land planning regarding occupation of our country’s coastal space, in an articulated way. It is a management model that, aware of world concern over the issue, was built on the basis of Brazilian demand and experience.

The current strategy is aimed at consolidating the necessary mechanisms for the implementation of GERCO, to develop a basic strategy for the promotion of its goal: the harmonisation of public policies through co-ordinated and co-operative action among the various government levels, private initiative and civil society, represented in various state groups and in the federal context by the Group for the Integration of Coastal Management, in the framework of the Inter-ministerial Commission for Marine Resources (GI-GERCO/CIRM).

In spite of the size of the territorial and the problems of the Brazilian coastal zone, GERCO has gathered, in the three levels of government ac-
tion, a large amount of information, reflecting 45% of the zoning of this coastal zone, and of Management and Monitoring Plans, prepared in a collaborative way as basic mechanisms for the establishment of partnerships and the implementation of alternatives to solve local problems and incentives promoting sustainable productive activities. The contributions and progress in the field of marine pollution control, involving oil spill accidents, should also be stressed.

Progress achieved and challenges to be overcome are set in the context of the guidelines established as priories by the MMA for Coastal Management:

1. **Land use planning** – to finalise zoning procedures by the State executory institutions, with the establishment of environmental quality goals in priority areas, involving and strengthening joint action among the municipal governments, private initiative and organised society;

2. **Project for Biodiversity Management and Socio-Economic Valuation of the Mangrove Ecosystems in Tropical America (MMA / UNESCO / UNDP)** – To carry out case studies in Brazil, Colombia, Ecuador and Costa Rica, seeking answers and regional models regarding the sustainable management of these ecosystems, with financial resources from the Global Environmental Facility – GEF;

3. **Orla Project** – to establish alternatives for the use of areas of the Union Heritage, located along the beach, on the basis of guidelines and standards for regulated use and development of strategic projects for new business opportunities generating employment and income;

4. **Port Environmental Agenda** – To insert the environmental dimension in the Port modernisation process, contributing to the reduction of operating costs and the implantation of environmental management units in ports and other facilities;

5. **Tourism Environmental Agenda** – To strengthen the integration of coastal management with tourist activities, linked to public policies for urban development and transport, involving actions in areas selected for their natural, historical or cultural characteristics.

With a view to optimising available knowledge and the working capacity of the institutions participating in Coastal Management, areas of common interest for MMA and SEBRAE have been identified, outlined in a sustainable development perspective, following the guidelines set out below, among others:

(i) to give greater impetus to economic opportunities, considering the ecosystems’ capacity for environmental support;
(ii) to give value to the natural, historical and cultural heritage;
(iii) to train and empower local communities;
(iv) to foster the enterprising spirit in generating employment and income; and
(v) to promote sound practices and technologies for the use of environmental resources.

This effort toward joint action is strengthened by the present Strategic Orientation of SEBRAE, establishing “maximum orchestration” with the planning strategy outlined for the country, in a process of public policy conception, formulation and evolution.

Regarding the Exclusive Economic Zone, the MMA is developing, in the context of CIRM, a Programme for the Evaluation of the Sustainable Potential of Living Resources in the Exclusive Economic Zone (REVIZEE). The objective of this programme is to identify the sustainable potential for catches of marine living resources in Brazilian jurisdictional waters.

The REVIZEE Programme is generating relevant results regarding the country’s fisheries. Several of these results have already been transmitted to sectors responsible for the management, planning, promotion and development of national fisheries resources. The Programme offers an opportunity for diversification of the existing fleet and the enhanced use of installed industrial facilities, and for the establishment of an ocean fishing fleet, aimed at benefiting from the living resources in the more remote areas of the EEZ. This will also contribute to lessening pressure on traditional (coastal) fishery stocks – the majority of which have been overexploited. Furthermore, the knowledge of the marine biotic and abiotic environment that the programme is producing will have other applications such as biotechnology and environmental management of Brazilian jurisdictional waters. Some the-
matic areas within the scope of the Programme could be broadened to include, among others, the monitoring of marine oil pollution sources in the main ocean basins where oil prospecting, exploitation and production takes place.

Thus REVIZEE carries out a unique task of great socio-economic relevance to our fisheries activities which are intensive in their use of labour, generating approximately 800 thousand jobs, involving a contingent of nearly 4 million people who depend, directly or indirectly, on the sector, in addition to being one of the main sources of protein for the consumption of the population. REVIZEE is essential in integrating national spaces to the Economic Exclusion Zone, an enormous maritime area of about 3.5 million Km$^2$, reaching from the outer limit of territorial waters (12 nautical miles from the coast), to 200 nautical miles (370 km) from the coast and also covering the region around the Brazilian ocean islands and archipelagos.

The possibilities for regional co-operation are broad reaching, both in the context of GERCO and in that of REVIZEE. In the first case, it is pertinent to mention the regional component for the SW Atlantic of the Global Action Programme for the Protection of the Marine Environment from Land-based Activities (PGA), involving Brazil, Argentina and Uruguay. In the context of REVIZEE, the possibility for co-operation also exists, referring to the management of fish stocks that are shared among the three countries.
Experience in setting up the Seaflower Biosphere Reserve in the San Andrés Archipelago, Providencia and Santa Catalina in the Colombian Caribbean

Arq. Henny Taylor Florez
Sub-Director for Planning – CORALINA

During the nineties, Colombia, considered to be among the three countries having the greatest biodiversity in the planet, started on a new route towards strategic changes in its development model and in its relationship with the natural environment. Thus, in the 1991 Constitution, the San Andrés Archipelago, Providencia and Santa Catalina are designated as Biosphere Reserve, and it is through Law 99 of 1993, that CORALINA (Corporation for the Sustainable Development of the San Andrés Archipelago, Providencia and Santa Catalina) is set up to carry out the necessary actions to implement this designation on a local level and to achieve recognition on an international level. This recognition was achieved on 10 November 2000 by UNESCO’s Man and the Biosphere Programme (MAB: Man and the Biosphere), thus becoming part of the World Network, presently amounting to 393 Biosphere Reserves.

The Archipelago is located in the Greater Caribbean region, 800 km from the Colombian coast and 150 km from the Central American coast. It covers an area of 52.5 km² and a territorial sea of 9,814.42 km²; comprising the islands of San Andrés (27.4 km²), Providencia (18 km² at 70 km from San Andrés) and Santa Catalina (1 km²), and a series of islets, keys and banks. San Andrés has 56,000 inhabitants and over the past few years has shown an advanced state of deterioration of its environment and natural resources due to migration from the continent, characterised by disorderly and predatory settlement, endangering the islands’ sustainability.

Our Archipelago has certain characteristics that are of major importance on a world level. It is of special natural and scientific interest due to its marine and terrestrial ecosystems: coral reefs, sea grass beds, beaches, dunes, mangroves and dry tropical forest. The Archipelago has one of the most extensive reef systems in the Atlantic and is Colombia’s greatest reef area. It has communities of organisms that do not exist in other parts of the country and its marine biodiversity is enormous, as is its development potential. This marine biodiversity is scantily present in the World Network of Biosphere Reserves.

Since CORALINA launched its activities mid.1995, we have learnt to identify and understand problems from a different perspective and to value the most feasible solutions, based on concepts of sustainability and ecological principles.

The work carried out has been done through projects funded not only by monetary resources, but also by means of logistic support and training by local and international bodies. One of the relevant projects was the inter-administrative agreement with FONADE (Financial Fund for Development Projects), with IDB (Inter-American Development Bank), to carry out the project. “Studies and Actions to set up the San Andrés Archipelago, Providencia and Santa Catalina Biosphere Reserve,” successfully completed in April 2000. Its aim was to gather the necessary information to comply with the UNESCO Nomination Format. Through this project the terrestrial zonation plan was achieved.
Thanks to research carried out, the Corporation now has the environmental baseline for the Archipelago (set out in its totality in the Environmental Planning Plan, strategic 1998-2010 Plan) the main input for the formulation of the Management Plan for the Biosphere Reserve setting out actions towards the development of the region and the conservation of the natural base of the islands. Presently, and in accordance with the 1997 Law 377, a Plan for Insular Territorial Planning for the Archipelago is being prepared, an essential instrument to define the various zones of the Reserve.

We are conscious that regulations or state actions are not enough to achieve the proposed objectives, the environment and its resources need to be taken and managed by society as its own heritage for this to occur. The major strength of the Corporation is that it has social support and the confidence of local organisations, unions, environmental organisations, schools and colleges and especially the confidence of inhabitants who are more aware and sensitive to the environmental aspects of our islands.

With this designation by UNESCO, a long process has started, involving arduous work by a community that wants a more friendly territory for the forthcoming generations, with greater biodiversity, where life and co-existence are more decent, where the quality of life is complete and where natural resources are considered as basic elements in guaranteeing a better quality of life.
Introduction to AUGM

Because of their heterogeneous development, and the extreme dynamism presently characterising the evolution of knowledge, Universities taken individually are not prepared to respond, with the same degree of excellence and efficiency, to all the requirements of the environment where they are inserted. In this respect, joint work by various universities, acting as a system, would seem to be a suitable and feasible solution in every sense. This system makes it possible to generate a wide academic forum, a sort of virtual sub-regional University. It is within this context that the objectives the Association of Universities of the Montevideo Group (AUGM) should be understood:

1) to set up a common academic corps comprising teachers-researchers having the highest qualifications and excellence from the member Universities of the Group;
2) to establish a system for community use of such academic, scientific and technical staff and the existing facilities:
3) to build up a common academic forum, that will make it possible to integrate and use the efforts put into education in all the spheres of action of the Group, making them more fruitful.

AUGM’s Academic Committee on the Environment was set up in view of the need to launch interdisciplinary fora to address common issues in the region, such as environmental questions.

Between 1994 and 1998, various scientific events were held, with the participation of over 700 specialists from all the universities. During the last meetings, the idea of a joint post-graduate course took shape and a regional postgraduate project was submitted to IDB in 1998.

On the basis of this submission, data was gathered on post-graduate courses in the AUGM (specialisation, master and doctor level courses), and a CD ROM was prepared with support from UNESCO with information on over 100 courses, involving close to 500 teachers from a wide spectrum of disciplines. It should be noted that, according to the data found, there is a wide diversity of specialisation, master and doctorate level courses. The most structured ones are those offered by Brazilian universities.
Regional Post-Graduate course

With experience acquired in over four years work, a project was submitted, containing three basic nuclei:

1. Training of human resources. The idea was to open up the master level to all those holding a university degree and a special quota was given to enable people from state bodies, NGOs and enterprises to take part in the courses.

2. Promotion of research aimed at providing a response to the concrete needs of society. These should be relevant to the problems of the region and should be given an interdisciplinary treatment.

3. To provide society with specialists who understand regional issues satisfying the needs and enhancing the population’s quality of life.

The objective is that in a period of six years, 150 graduates would have shared a common root of subjects, later completing their work in any centre or laboratory of the member universities.

It should be added that although this programme was submitted and discussed on various occasions with IDB technicians and politicians in Argentina and Washington, when the final proposal was submitted for three regional post-graduate courses at a cost of 1000000 over six years, the Bank changed its criteria for projects of interest, limiting investment in postgraduate courses to members of countries having problems of extreme poverty, who were to study abroad.

At all events, the AUGM has not abandoned these three projects and has submitted them to the OAS and the governments of MERCOSUR countries.

Bases

At postgraduate level, the training of professional environmentalists, particularly when addressing ecosystem management and environmental management, must be different from that of scientists, and the higher degrees proposed should be at a professional level. Not only should knowledge be enhanced but interaction between teachers and professional advisors should be intensified in close teamwork. Curricula and activities should be proposed considering that the graduates achieving higher degrees will potentially be directors of teams and management programmes. Beyond a curricula scheme similar to that at postgraduate level, with the natural differences in intensity and expected results, there are some differences. One is the need to substitute the Thesis system (individualist and with a delimited thematic approach) by professional work in a team of students having different specialisation and origins, aimed at strengthening thematic and regional integration. The second is to provide an opportunity for graduates from disciplines that are not directly linked to academic units to propose these plans. For this purpose the basic training of graduates linked to the environment should be strengthened, but team work will favour and enrich the parties.

Regarding continuous training of professionals, the university should pay particular attention to the specific needs, in real time of the professional organisations related with the environment. The activities programmed should be stimulating for professionals who should find a forum for intellectual enriching, personal satisfaction and an increase in their capacity for service. In our countries, many state agencies could benefit from this and come out of the intellectual paralysis in which they are submerged. Activities of this nature should be organised in a co-operative and collaborative way between the University and other organisations. Collaboration should not be merely administrative or financial on the part of participating non-university units, but a real integration of the academic proposal and the teaching corps, ensuring high quality. The University could offer residencies to professionals from companies and other types of organisations, for specialisation and up-dating while their professional experience would be of benefit in the class-room and in research teams.

With this criteria, universities must train technicians, the future political and administrative leaders, to make them capable of presenting concrete environmental problems from an appropriate scientific standpoint, socially committed to sustainable development.

Continuous education should include mechanisms for dissemination and university extension ensuring that progress in environmental knowledge, technological, methodological and instrumental innovation, reaches professionals and organisms in
a synthetic, integrated and accessible way, complementing the traditional circuit of workshops, congresses and scientific publications that are generally not very accessible or frequented by professionals outside the university context. The possibilities provided presently by electronic networks should stimulate this type of mechanism.

Finally the implantation of some of these measures will lead to a revision of academic structures, adapting them to the profound changes that we have briefly highlighted here.

Conclusions

The joint action of the AUGM member Universities will no doubt make it possible to strengthen these mechanisms for environmental training, research, extension and management, broadening the possibility for exchange and availability of teachers, facilitating horizontal transfer of knowledge and valuation of the natural, cultural and scientific heritage of the region, contributing to integration processes.

As stated in AUGM’s charter “education in favour of the comprehensive development of the population.” In this dilemma of Sustainable Human Development, the very pertinence and validity of the University in the twenty-first century is being played out.

Some may consider that these questions are an utopia. Certainly they are. Let us remember Paulo Freire and the need for an utopia and the organisation of hope to have the capacity to propose and to transform. Finally, we would like to quote Albert Einstein, a twentieth century celebrity, “The principle of madness is to do what we have always done and to expect different results.” From the vantage of the university we have the mission to avoid this principle.
The Argentine Biosphere Reserves as models of territorial management and sustainable development and as locations to increase the knowledge of interaction between Man and the Biosphere: potentialities, obstacles, trends

Alicia E. Toribio
Co-ordination Unit for the MAB Programme
Argentine MAB Committee

Abstract

In order to examine the degree of adjustment to some of the objectives and recommendations of the Seville Strategy by the Argentine Biosphere Reserve management, the Argentine MAB Committee, through its technical area, the Unit for Co-ordination of the MAB Programme (UCPMAB), developed a Project for “Interdisciplinary research in Biosphere Reserves,” between January 1999 and June 2000, with the support of UNESCO’s Participation Programme. Researchers, managers and academics, mainly from Argentina and Mexico took part in the project. One of the inputs was the knowledge generated in the process of Periodic Revision of Biosphere Reserves that Argentina carried out in 1999. The Project sought to contribute to promoting reflection on the causes of difficulties in achieving interdisciplinary studies in Biosphere Reserves. This was based on the assumption that such difficulties were significant obstacles in implementing the Seville Strategy regarding recommendations to use Biosphere Reserves as models of territorial management and sustainable development and as locations to increase knowledge of interaction between Man and the Biosphere. This presentation sets out the results of the Project.

Furthermore, the Project for Co-operation between coastal Biosphere Reserves in Argentina, Brazil and Uruguay, in an initial planning stage, is also discussed. This Project joins the intention of giving continuity to the process of reflection opened up in the previous Project and the process of periodic revision, and of bringing to fruition the desire of the MAB Committees in the three countries to carry out an exchange activity between the coastal Biosphere Reserves of Argentina, Uruguay and the South of Brazil.
Watershed management requires knowledge of the resources, knowledge of ecosystem functioning, conservation practices, sustainable production. These four principles are missing in most of the tropical watersheds. Usually government policies define type of production and traditional instruments, organisation and management are applied. Today, population has increased, land has degraded, water is scarce and contaminated. What used to work does not necessarily give today the best results. A forum where watershed inhabitants can discuss and create a common goal, where technicians can help develop adequate practices and where politicians put together a particular policy for the watershed is needed.

In four small watersheds in the Mexican Gulf coast we are trying to apply these four principles to watershed management. I will use two examples of productive projects: a fisheries enclosure in part of a river and a fishermen group developing ecotourism. They have a sustainable productive project, which nowadays represents a complementary income. The development of the project has allowed them to learn and practice how to organise themselves into a group, how to solve their conflicts and how to work together to make it produce. At the same time we have been analysing with them their environment (the ecosystem they work in), taking measurements and discussing what is needed to conserve it or restore it. We have developed material to help them understand their ecosystem and how it works. We are discussing how their project impacts the environment and what ecological practices should be applied. We are setting up conservation/restoration projects in which they play an active role. We are setting up a monitoring system which they can manage.

We believe through this type of integrated approach, we can develop a long term perspective of our resources and our environment which allows for productivity and conservation. This is the only way to maintain our diversity.
Participatory management of coastal ecosystems in the Amazon: prospects in the search for a new Society-Nature relationship

Henrique de Barros
Federal Rural University of Pernambuco
Email: debarros@ecologia.com.br

Abstract

The speed of relative degradation of Amazonian coastal ecosystems during the last few decades comes out of mistaken public policies that opened the way for large projects having considerable environmental impact. The public sector’s persistent incapacity to deal with those complex sources of imbalance is behind the recent transfer of the responsibility for managing different components of conflicts regarding use of natural resources to local communities. As this trend seems irreversible, since it is based on the structural reform of State, we argue that the effectiveness of such a process will depend on the strengthening of local capacities for organisation and advocacy. Instrumental to this success will be the implementation by academic research of realistic processes of knowledge transfer to the local level, geared to increasing local understanding of long term social costs of inappropriate exploitation of natural resources.

Mangroves, legislation and management of coastal areas: the case of Paranaguá Bay

Paulo da Cunha Lana
Centre for Sea Studies, Federal University of Paraná, 83255 000 Pontal do Sul, Paraná, Brazil
E-mail: lana@aica.cem.ufpr.br

Abstract

This paper evaluates the present day knowledge of the Paranaguá Bay mangroves, identifying their extension and boundaries, present uses and resource potential (exemplified by benthic fauna), pressure and tension on such resources and the legal instrument for social control. It presents alternatives to the present model for monitoring and social appropriation, with suggestions for zonation and adoption of strategies for heritage management. The unsuccessfulness of present forms of management, that are of a bureaucratic, centralising and restrictive nature, is due on the one hand to the gap with the scientific state of facts, and on the other, to the lack of participation by directly involved or affected local populations. The basic foundation for a management plan for regional mangroves is acceptance of the fact that their regional management should not be confused with strict conservation, as suggested by environmental legislation or by the more orthodox environmentalists. The primary mechanism will be the direct participation of the local communities, with the establishment of exclusive rights to access and manage resources, with a definition of exploitation quotas and the promotion of effective control through self-regulation. This regulation should be the fruit of a consensus between the fishers or “extractors,” protected by the best scientific evidence available, rather than a coercive public activity, as is the case today. Presently, such contracts are not contemplated and are not even legally protected by public policies addressing the conservation and preservation of natural resources in the coastal zone.
Environmental Education in coastal zones and the university: The experience of the Centre for Land and Sea Technological Sciences / UNIVALI

José Matarézi ¹ and Luis Eduardo Carvalho Bonilha ²

¹ Professor/Researcher at CTTMar, Universidade do Vale do Itajaí, SC – jmatarezi@cttmar.univali.br
Rua Uruguai, 458 – Caixa Postal 360 – Itajaí, SC. CEP: 88-302-202 – Tel: (0xx47) 341-7723
Laboratory for Environmental Education in Coastal Areas.

² Professor/Researcher at CTTMar and at CEJURPS da UNIVALI.
bonilha@mbox-1.cttmar.univali.rct-sc.br
Laboratory for Environmental Education in Coastal Areas

Abstract

Deep changes are coming in education as we conceive it today. Certainly they will be structural and functional changes, marking a new orientation to be followed by all Teachers. “Learning to know”, “learning to do”, “learning to live together” and “learning to be” are the four pillars of this new type of Education.

Faced with the need to set up an interdisciplinary team for the implementation and expansion of environmental education activities in the centre-north coast of Santa Catarina, and seeking to substitute coastal planning and environmental management activities and launch a more systematic process, inserting environmental education in its graduate courses, the CTTMar set up in 1997 a Laboratory for Environmental Education in Coastal Areas - LEA.

LEA considers training of environmental multipliers, volunteers and teachers to be of fundamental importance, to promote citizen restoration, social mobilisation and community participation. Through the various training courses for multipliers in Environmental Education in Coastal Areas: Community actions in Citizenship and the Environment, Management and Recycling of Wastes, Young Environmental Tourist Agents and The Environment and Preparation and Implantation of Ecological Trails, LEA’s scope of action is being broadened to cover the whole centre-north coast of Santa Catarina.

Furthermore, the Strategic Programme for the Sustainable Development of Coastal Regions and the projects Environmental Education and Community Participation, the Trail of Life (Re) Discovering Nature with the Senses and the Living Eye Programme: Voluntary Environmental Monitoring in Schools are current examples of the effort to create new educational methodologies together with the communities, schools and Conservation Units.
Urban Planning, sustainability and job creation. Case study of the Campeche region, Florianópolis, SC. Brazil

Tereza Cristina P. Barbosa1
Janice Tirelli Ponte de Souza
1 Federal University of Santa Catarina

Abstract

This study took place in the communities in the southern portion of Santa Catarina Island, in the city of Florianópolis, Santa Catarina State in Brazil as a result of a broad rejection of the Master Plan proposed since 1989 by the municipal government for this region known as the Campeche plain.

Members of the community prepared an alternative plan through a process that began with data collection, review of technical reports and other information about the social, environmental, geological, natural, historic, cultural and infrastructure characteristics of the 55 km² Campeche region. At the First Community Planning Seminar in Campeche, organised by community associations in 1997, four working groups were established to analyse the government proposal - sanitation; road system, public space, and natural resources and urban zoning. These groups developed guidelines for urban development and planning in the region. After two years of unsuccessful attempts to have the community proposals accepted through dialogue and negotiation with municipal government, and faced with the approval of the official plan in the Florianópolis City Council, the community decided to prepare its own plan with the support of university professors and other technicians from a wide variety of fields. The community plan for the Campeche Plain, a Proposal for Sustainable Development, was submitted to the City Council as an alternative to the government plan in March, 2000. The community proposal considered the requests, problems and needs raised by the community in the Seminar and gathered during an extensive and unique exercise in participatory planning that involved months of field work and community meetings held street by street. The community plan seeks to identify potentialities and provide support for local vocations including ecotourism, education, services and recreational activity, while at the same time preserving the natural and cultural qualities and landscape of the region. While the municipal government proposal reveals an alarming disregard for state and federal environmental law and does not contemplate a relation between planned population density and provision for basic infrastructure, the community plan seeks to generate infrastructure, year-round employment and stimulate professional training. It also respects environmental legislation. As a result the community plan hopes to make possible year-round tourism and the development of the region’s potentials, while preserving the quality of life and sustainable land use that considers the natural functioning and recharging of the underground aquifers used for the local water supply.
Fisheries of inland waters are regulated by the Brazilian federal law (no. 466 from 08.11.1972) which determines legal gear to be used in fishing operations. A central item is the legal mesh size of gill nets. Only nets of 70 mm stretched mesh size are allowed. The use of fyke and trap nets is restricted to mesh sizes higher than 50 mm stretched mesh size. Access to fish resources in lakes and river is not restricted. These regulations hamper effective fisheries management of multi-species stocks. In Lagoa dos Quadros, a 119 km² lake in the littoral area of Rio Grande do Sul, experimental fisheries with mesh sizes ranging from 30 mm to 100 mm, showed that only 5.2 % (equivalent in biomass 48.2%) of all individuals were captured in “legal” mesh size 70 mm or higher. Several smaller sized species of the genera Astyanax, Lycengraulis or Cyphocharax were underrepresented in the captures. Investigations of the gonadal development indicated that a mesh size reduction of 10 mm would not negatively interfere with the natural reproduction of larger sized species like Hoplias malabaricus and Loricariichthys anus but would increase captures at a rate of 17% - 130%. Our proposal for future management is to reconsider existing regulations. We recommend that the sizes of mesh and the use of fyke and trap nets should be more flexible based on the results of scientific monitoring. A precondition for all future management plans is a restriction of the access to fisheries resources: only local communities should obtain licenses for fishing with nets and similar equipment.
Aquaculture on a world level has been growing at a rate of over 8% a year, mainly in the so-called Third World countries, whose total production is approximately 36 million tons. This growth rate contrasts with that of fisheries and agriculture, whose rates of growth are 1.2 and 3.5% per year, respectively. For this reason, aquaculture is considered to be fundamental for the planet’s food security, especially during the twenty-first century, during which the world population should surpass 10 billion inhabitants. Although the importance of aquaculture for humanity’s food security seems indisputable, several authors have recently highlighted a series of socio-environmental problems caused by predatory practices, in strict parallelism with the trends observed in the development of modern fisheries and agriculture. As is the case with other technologies using renewable natural resources, the impacts of aquaculture can affect the social structure of the regions where it is practised. Among the most important impacts in this category are disputes over access and use of resources between stakeholders involved in aquaculture and between those carrying out other economic activities. A form of controlling these impacts might be the regulation of production activities. However, according to FAO (1999) very few countries have policies and legal frameworks that regulate aquaculture. Given the fact that many countries do not have specific legal structures for the regulation of aquaculture, FAO has prepared the document “Code of Conduct for Responsible Aquaculture” (FAO, 1997), that is part of a previous document called “Code of Conduct for Responsible Fisheries.” Following an analysis of the situation of Brazilian aquaculture, it now has incipient legislation, management bodies centralising the activity’s development policies and institutions devoted to teaching and research on this technology. Based on that analysis of the situation, the Code of Conduct for Responsible Aquaculture is practically a reality. However, due to the fact that this Code is a voluntary instrument and not a legal one, campaigns must be undertaken to disseminate its main recommendations, in order to fill in existing gaps and to facilitate the development of a more sustainable aquaculture, not only from the environmental standpoint, but also from the social one.
Islanders of the SE Brazilian coast:
Livelihood, natural resources and resilience

Alpina Begossi
Nepam Unicamp CP 6166
Campinas S.P. 13081-970
BRAZIL
alpina@nepam.unicamp.br

The concept of livelihood associated with ecological concepts such as diversity, resilience, stability, complexity and territoriality is useful in order to analyse the interactions of people and the environment. In particular, these concepts have been helpful to understand the tactics and strategies of coastal Brazilian artisan fishers when searching for, obtaining and processing their food. I will focus on resources such as vegetation and marine fauna from information collected in interviews, systematic sampling of fishing at landing points, marking of spots using GPS and by collecting plants and animals. Data are provided for diversity of plant uses by artisan fishers, and for aspects of territoriality and sea tenure among coastal fishers from islands located along the coast of Sao Paulo and the southern coast of Rio de Janeiro. Diversity indices, resilience and stability are approaches associating livelihood and local management. Conclusions include the importance in using local rules for management (such as the fishing spots used by artisan fishers) and the Extractive Reserve, as an example of an ecological and institutional resilient system.
Learning from fishers: incorporating local knowledge in policy design and assessment

Cristiana Simão Seixas and Fikret Berkes
Natural Resource Institute
University of Manitoba,
Canada

Abstract

Local knowledge about ecosystem dynamics can be a valuable tool in understanding complex systems of natural resources management, and therefore in developing or re-formulating management plans. Using examples from different regions of the world, this paper explores some of the reasons why local knowledge, particularly traditional ecological knowledge, might be taken into account in developing management plans for coastal zones. Local ecological knowledge can be used either as a source of information or to assess existing management plans as seen in the case study of the Ibiraquera Lagoon, SC, on the South coast of Brazil. Although the traditional management system was partially disrupted during the 1960s and 1970s, some of its elements as well as ecological knowledge provided by local fishers were used by government agencies in the early 1980s to elaborate new regulations for the local fishery system. The new management system proved to work well, and seemed to be sustainable, as long as there was strong enforcement of regulations, until the mid 1990s. During the 1980s and 1990s, the main economic activities of most communities surrounding the Lagoon changed from small-scale fishery and agriculture to tourism-related activities. The study concludes that in developing coastal management plans, attention should be given to local knowledge and needs. As tourism-related activities are predominant in the area, the goals of Lagoon management should perhaps change focus from a strictly fishery-oriented management to one that encompasses more recreational needs as well as local fishers’ needs. In this sense, local knowledge could be used in designing and assessing a new management plan for the Lagoon. As another source of income, local residents could also undertake tourism planning (including ecotourism) based on their knowledge of the local ecosystems.
Caiçara livelihood: Knowledge, use of natural resources and diet

N. Hanazaki¹,² and A. Begossi²

¹ Graduate Program in Ecology, UNICAMP, Campinas SP, Brazil. natalia@nepam.unicamp.br
² Centre for Environmental Research (NEPAM)/UNICAMP. C.P.6166, 13081-790 Campinas-SP, Brazil

Abstract

The register of local knowledge through ethnoecological and human ecological research can be useful in management contexts, also supporting collective management actions. This paper relates an ongoing research focusing on the human ecology of Caiçaras, especially on their diet and relation to the natural resources used. Caiçara is a broad denomination for the native inhabitants of the south-eastern Brazilian coast. One of the foremost characteristics of their livelihood is the use of natural resources. The settlements included in this study are located on the southern part of São Paulo State coast, and the majority of inhabitants are native Caiçaras. We show here some general results regarding the natural resources exploited by Caiçaras for their livelihood. Fishing is an important activity, whereas agriculture and game had lost its importance. Growing tourism is another feature of these settlements. Even with these recent changes in their livelihood, Caiçaras still possess a detailed knowledge on their environment, regarding plants used, fishing activities and swidden agriculture. We argue that this knowledge can be useful to support collective management actions.
The Forum of the Estuary of the Patos Lagoon: A preliminary analysis of institutional arrangements for conservation of coastal resources in southern Brazil

Daniela Coswig Kalikoski & Les Lavkulich
Institute for Resources and Environment
University of British Columbia
Canada
e-mail: danielac@interchange.ubc.ca

Abstract

Fisheries belong to a category of resources often referred to as common pool resources, in which exclusion is difficult and joint use involves subtractability. These two characteristics create potential dilemmas in which people following their own short-term interests produce outcomes that are not in anyone’s long-term interests. Findings on common property resources literature show that most environmental problems such as the tragedy of the commons can be seen as problems of failure to control access to the resource, and to enforce internal decisions for collective use. In the estuary of the Patos Lagoon, Brazil, artisan fisheries are going through a tragedy of the commons. Fisheries resources are decreasing sharply compromising the livelihood of more than 10,000 fishers. Triggered by a consensus of the failure of current institutions to manage these resources, new institutional arrangements have been established in the area, redefining rules and rights, to manage the resources. They involve a forum (Forum of Patos Lagoon) composed by all stakeholders interested to discuss and develop alternative actions to mitigate and/or resolve the problems of the fishers and the crisis in the artisan fisheries activities. The objective of this paper is to develop a framework for analysing the establishment of co-management arrangement in the estuary of Patos Lagoon, RS, Brazil. The fundamental issue here is to analyse the process of crafting a co-management system in the estuary of the Patos Lagoon, Southern Brazil in order to tease out the local and external factors that influence the development of this joint decision making action. The underlying question we want to discuss is: What is the importance of this new arrangement for the conservation of coastal resources in the estuary of the Patos Lagoon? Criteria identified in the literature are proposed to assist the evaluation of the performance of institutional arrangements. They involve analysis of access, resource boundary and group boundary; decision making for joint use; and science and institutional learning. Methods involved document analysis, interviews and meetings attendance. Environmental problems are usually associated to problems of ill-defined institutional arrangements.

Therefore the analysis of weaknesses and strengths in the current institutional arrangements can contribute to the identification of factors that account for successful fisheries co-management which in turn can help prevent biodiversity loss and maintain the livelihood of coastal communities.
LIST OF PARTICIPANTS

Luis E. Aragón (prof.Dr.)
Universidade Federal do Pará
Núcleo de Altos Estudos Amazônicos - NAEA
Rua Augusto Correa n 1 - Setor Profissional
66075 – 900 - Belém - PA
Fones: (91) 211-1141/1231
Fax: (91) 211 – 1677
Rodovia Augusto Montenegro n 5000
Greenville I, Q09 L18
66.635-110 Belém, PA
BRAZIL
Fone: (55-91) 268-0321
aragon@amazon.com.br

Milton Asmus (Dr.)
Fundação Universidade Federal de Rio Grande – FURG
Laboratório de Ecologia de Sistemas
Departamento de Oceanografia
Rua Engenheiro Alfredo Huch, 475 CP 474
96201-900 - Rio Grande – RS
BRAZIL
Fone: 53 – 233-6561
Fax: 53- 233-6560
docasmus@super.furg.br

Andrea Ballestero
Escuela Latinoamericana de Áreas Protegidas-ELAP
Instituição- Universidade para la Cooperación Internacional
Endereço – 504-2050 San José
COSTA RICA
Fone – (506) 283-6464
Fax – (506) 280-8433
elap-cad@uci.ac.cr

Tereza Cristina Pereira Barbosa (Dra.)
Universidade Federal de Santa Catarina – UFSC
Departamento de Ecologia e Zoologia / Centro de Ciências Biológicas
88040-920 – Florianópolis – SC
BRAZIL
(48)-331-6903 ou (48)237-4376
tereza@mbox1.ufsc.br

Henrique Monteiro de Barros (Dr.)
Universidade Federal Rural de Pernambuco
Departamento de Letras e Ciências Humanas - UFRPE
Curso de Mestrado em Administração Rural e Comunicação Rural
Rua Dom Manoel de Medeiros, s/n - Bairro: Dois Irmãos
52171030 - Recife - PE - BRAZIL
Fone/Fax: (081 ) 3441-7185
debarros@elogica.com.br

Alpina Begossi (Dra.)
Universidade Estadual de Campinas
Núcleo de Estudos e Pesquisas Ambientais - NEPAM
Cidade Universitária Zeferino Vaz
Bairro: Barão Geraldo
C.P: 6166
13081-970 -Campinas – SP
BRAZIL
alpina@nepam.unicamp.br
alpina@supernet.com.br
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WORKING PAPERS


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No 29 (1999): La Reserva de la biosfera los Tuxtlas (Mexico), por S. GUEVARA SADA.


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