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Stream "Natural Resources and their Interlinkages". Synthesis of the panels NRI2, NRI4, NRI6 and NRI7

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Introduction

The cases reviewed were very diverse and heterogeneous. For this reason I have choosen to make this synthesis correspondingly general.

Framework

The framework for the cases is the relationship between Nature and Culture. This framework, often referred to as the Nature-Culture paradigm, consists of two parts, namely an Ecological System (or Ecosystem) and a Social System.

Linkages (general)

The following three types of linkages are recognized in this framework: (i) Linkages within ecological systems; (ii) linkages within social systems; and (iii) linkages between ecological and social systems (that is, within the Nature-Culture paradigm).

Focus

Three general foci in the papers were identified, as follows:

- CPRs as links between natural resources and people (that is, a focus on capturing benefit streams);
- Strategies and processes, as well as means and goals, of managing natural resources and people; and
- Borders, within and between the ecological and social systems.

Sectors and Commons Covered

The following important sectors and commons were covered: Atmosphere, Coastal zones, Fisheries, Forestry, Land / agriculture, Rangelands, Riparian commons, and River basins.

Issues Addressed

A list of broad issues that were addressed includes: Creation of commons, Environmental health, Land reform, Land settlement, Parks versus people, Protected areas/parks, and Regulatory frameworks.

Approaches and Tools Used

The following approaches and/or tools were used in researching and analyzing the selected issues: Conservation, History, Institutional analysis and reform, Land regulation and cadastres, Law, Natural resource management, and Risk analysis.

Linkages (specific)

Within the set of general linkages identified (see above), the following more specific linkages were identified and used:

1. *Within the Ecological System*
    - Food chains;
    - Subsistence / livelihood practices;
    - Bio-accumulation (a new linkage);
    - Atmospheric pollution (a new linkage);
2. *Within the Social System*
    - Participation (a new linkage, horizontal and vertical orientation);
    - Micro-macro interactions (a new linkage, vertical orientation);
    - Decentralization (a new linkage, vertical and top-down orientation);
    - Public sector – civil society/NGOs – private sector (a new linkage, many-stranded orientation);
3. *Within the Nature-Culture Paradigm*
    - Co-management (incl. Joint Forest Management; discussed in particular in cases on/from Africa);
    - Boundaries (incl. inclusive and exclusive boundaries, and levels of boundaries);
    - Pathways (understood as extensions of linkages found within the social system); and
    - Community-Based Natural Resource Management [CBNRM] (understood as a set of dynamic, processual, complex, multi-directional and many-stranded linkages, discussed in particular in the cases on/from Africa; and organized in three separate but closely linked areas: (i) effective community-based groups; (ii) operational linkages between the local and the government levels; and (iii) evolution of an enabling institutional framework).

Main Conclusions

The papers proposed a number of interesting ideas, and arrived at a number of important conclusions, as follows:

1. *Strategies and Processes*

    - There was an important focus on strategies and processes within and between the ecological and social systems;

2. *Institutional Analysis and Reform*

    - Institutional analysis and reform are important analytical and practical tasks in order to identify linkages and locate bottlenecks in interactions between ecological and social systems;

3. *Old and New Linkages*

    - Important linkages to consider include both old and new linkages;

4. *Increasing Complexity*

    There is an increasing complexity in the linkages recognized, for a number of different reasons:

    - The number of actors / stakeholders is increasing, and they have often irreconcilable interests;
    - There are increasing impacts on, and dependence on, the environment (horizontally, in relation to the local level; and vertically, in relation to the nation-state level);
    - Integration in the nation state (vertically, in relation to the local level);
    - An increasing number of irreversible changes are taking place, especially in ecological systems;

5. *Complexity and Dispute Resolution*

    - The growing complexity makes in increasingly hard to adjudicate and resolve conflicts between stakeholders, and, more generally, between ecological and social systems;

6. *Concerns with Translating*

    - There is a concern with the need for translation – and for translating – between key domains, arenas and dichotomies: (i) between Nature and Culture; (ii) between the Traditional and the Modern; and (iii) between theory and practice;

7. *Environmental and Social Sustainability*

    - The overall goal with a concern with natural resource management and linkages is environmental and social sustainability;

8. *Units of Action and Analysis*

    - It is important to define / delimit appropriate units of action and analysis (in particular within the social system); and

9. *Conceptualizing Commons*

    - There is a major emphasis on searching for new ways of conceptualizing commons, towards creating more adaptable and flexible linkages and borders, within and between the ecological and social systems.