

INSEE

NEWSLETTER

CONTENTS

From the Desk of the Secretary,
INSEE

Pushpam Kumar 1-2

Pre-conference Workshop on
“Ecosystem Services in Coastal
and Marine Systems”

R J Ranjit Daniels 2

The Fourth Biennial Conference
of INSEE on “Ecology and
Human Well Being”

Madhu Verma 6

New Books from INSEE family
5, 9

Forthcoming Events
11

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FROM THE DESK OF THE SECRETARY

Since its inception in 1998, the Indian Society for Ecological Economics (INSEE) has been exploring the fundamental tenants of the discipline with a strong motivation to provide solutions to problems, arising due to ecological imbalances that have a tremendous impact on society. Issues related to the assessment of income and wealth including green accounting, substitutability of man-made capital for natural capital, valuation of ecological functions, efficiency, scale (physical size not the economies of scale), thresholds and uncertainty and the need to bridge the gap of knowledge and epistemology are some issues which have commanded a central place in INSEE's priorities. The unique feature of INSEE is its proclivity to examine these issues with the help of empirical evidences and field based observation from within the Indian subcontinent.

In this context, it was very apt that the INSEE decided to hold its Fourth Biennial Conference on 'Ecology and Human Well Being'. The momentum for this theme got built up in the backdrop of findings of some of the scientific assessments like Millennium Ecosystem Assessment (MA)¹. MA's provisional findings on ecosystem and Human Well Being was intellectually stimulating for the ecological economics fraternity in India where considerable amount of research was either already done or is currently going on.

Biodiversity and ecosystems provide an array of goods and services to the humans but their contribution remains blurred in accounting and valuation, although the impact of those contributions happens to be profound. This on the one hand, shows the lacuna in measurement tools, on the other hand it conveys the great need for new and improved framework that existing 'mainstream' economics has been unable to provide. In this endeavor, one should not be oblivious to the dynamic nature of ecosystems where interaction between four basic system functions: exploitation, conservation, release and reorganization are critical and are always changing (Holling, 1987)².

Resilience or ability of the ecosystem to come back to its original position after perturbations is something one should always take into account while designing the interventions and responses to the problems of ecology and environment. Social and ecological resilience could work in different directions with varying degrees of intensity in their impact. Exploring and analyzing the thresholds and irreversibility of these systems could be of unprecedented excitement and relevance for researchers.

Valuation of incremental change in ecosystem services is of special relevance for the decision makers who invariably face various types of trade offs in day-to-day life. The debate on valuation is still very alive but now the issue is centered on 'how to do it' instead of 'whether we should do it'. The consensus seems to be emerging that valuation instead of being based on static and myopic preference of the individual, should be done considering long-term sustainability criteria and indicators through a participatory process. Valuation enables the decision makers in making better informed choices when problems of natural resource management transcends into different arena especially in a country like India where forestry, common grazing land, water bodies (wetland), coastal and marine resources etc. need intervention at community levels through collective action.

INSEE thus chose this theme of 'Ecology and Human Well-Being' for its Fourth Biennial Conference. With the help of a large number of technical papers selected by the expert committee, plenary discussions and round table, INSEE deliberated on this theme on June 3-4, 2005 at IGIDR, Mumbai. The sub themes of the conference were:

Ecological and Social Resilience

Ecosystem Services and Quality of Life

Policy Reform for Sustainable Development: Governance and Institutions

Valuation for Ecosystem Changes

Communities and Collective Action

This Issue of the Newsletter exclusively covers the pre-conference and the conference deliberations with a brief summary of each event. I am happy to mention here that the next Biennial conference of ISEE would be held in New Delhi on Dec 15-18 on the theme of *Ecological Sustainability and Human Well Being* (please see the web www.isee2006.com for the details). The preparation for this ISEE 2006 event is in full swing and it promises to be an intellectually challenging and stimulating event for the ecological economics fraternity of the world and Asia in particular, as ISEE Conference is being hosted in Asia for the first time. □

Pushpam Kumar

Secretary, INSEE

¹ Millennium Ecosystem Assessment (MA) (2003), *Ecosystem and Human Well Being: A Framework for Assessment* (Ch3), Island Press, Washington DC.

² Holling, C S (1987), *Simplifying the Complex: The Paradigms of Ecological Function and Structure*, *European Journal of Operational Research* 30: 139-146.

Pre-conference Workshop of the Fourth Biennial Conference of INSEE

Ecosystem services in coastal and marine systems

R J Ranjit Daniels

Biodiversity has a number of values. The Convention on Biological Diversity (CBD) begins by acknowledging that biodiversity has an 'intrinsic' value – a right to exist that all forms of life are bestowed with. CBD goes on to list the other dimensions of biodiversity values such as ecological, economic, social, ethical, scientific, aesthetic, etc. The various dimensions of biodiversity values are conventionally grouped under two broad categories viz., eco-centric and human-centric. Such a simplistic (and artificial) bifurcation has often led to conflicts amongst nature conservationists and those who see biodiversity as 'natural resources' only to be utilized for the welfare of humans. These conflicts have left us with questions such as should we value biodiversity at all? Is valuation ethical? If yes, how best is the valuation done? Is it possible to assign monetary values to all components of biodiversity, say to a tiger or elephant and the roles they play in an ecosystem?

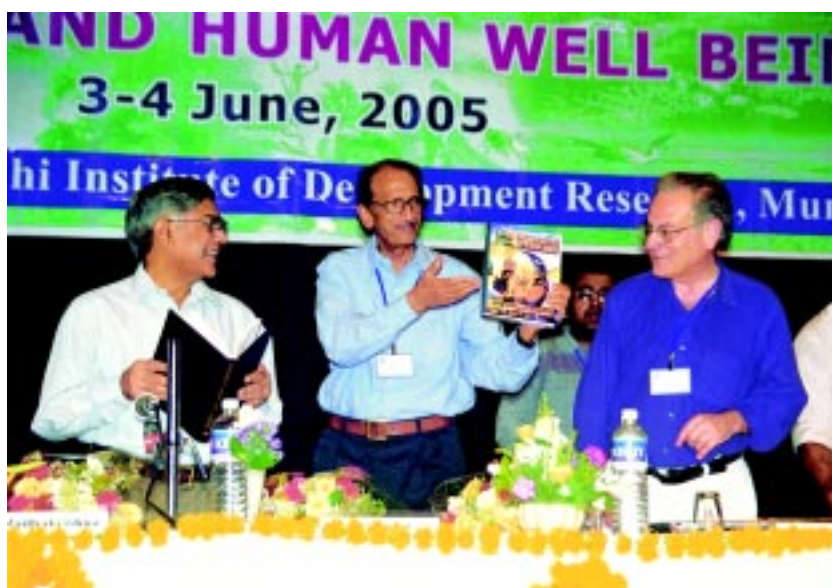
While there can be never-ending debates on the above questions, the single question that has most frequently confronted decision-makers – the one that concerns valuing the *roles* that the different components of biodiversity play in an ecosystem, cannot be ignored. Ecological economics has attempted to address the issue of valuing ecosystem services of biodiversity in many different landscapes and biomes throughout the world. Whereas there

are modern tools in economics that help in valuing nature's services, biodiversity (eg. species) and ecosystems, there are not adequate ways of identifying ecological processes that are controlled by biodiversity and can be categorised as general and quantifiable.

With the above considerations in view, a one-day workshop was organised at the Indira Gandhi Institute of Development Research in Mumbai on June 2, 2005. The main focus of the workshop was to orient economists and social scientists to the fundamentals of ecosystems and the processes that sustain them that can be recognised as 'services'. In order to narrow the focus, the specific ecosystem that was chosen for discussion at the workshop was the coastal and marine ecosystem. The workshop was attended by nearly 30 participants including 13 who were formally registered. The participants were oriented to the principles of coastal and marine ecosystems through a set of background papers (provided in the form of a manual), a series of lectures and a panel discussion.

The background papers were simple and broad in perspective aimed at introducing a 'non-specialist' reader to the concepts of marine ecosystems, the geographical scales at which they are defined and the major communities and species that link the coastal biodiversity and marine ecosystems. In this context, the papers highlighted the biodiversity of the seas, coral reefs and mangroves. A species of animal - the marine turtle, also known as the 'ambassador' of the seas, was chosen to illustrate the linkages between the coasts and the seas.

Ecosystem services of mangroves



Book based on the last INSEE Conference 2003 being released by the ISEE President—Joan M. Alier (extreme right), Also seen in the picture are Director IGIDR—Dr. R. Radhakrishna (left) and Dr. N.S. Jodha, INSEE President (in the middle, holding the book).

Five resource persons oriented the participants to the various facets of coastal and marine ecosystems. The first, Dr Sayeeda Wafar from Goa, who is presently the Treasurer of the Mangrove Society of India, described the mangrove community and the various roles they play in the coastal and marine ecosystems across the tropical world. She started by defining mangroves and explained that the term 'mangal' was originally used exclusively to identify the vegetation type and associated species of plants and the term 'mangrove' identified the ecological community (including the associated animals) in a holistic sense. Mangal are remarkably adapted to living under saline conditions that vary considerably due to the tidal action and seasons mainly due to their specialized root systems. The roots of the mangal

physically serve as nurseries for fish, create shores and enable the vegetation to withstand the impacts of cyclones.

Services that the mangroves provide to humans are many including aesthetic. In fact the *Sundarban* that literally means 'beautiful forest' got its name due to the pleasing sight of the silvery white leaves of the tree *Heretiera fomes*. The tree is locally called *sundari*. Reclamation of land and clear-felling for aquaculture continue to destroy mangroves across the globe. Pollution caused by oil is another major factor that has degraded the mangal. Nevertheless, efforts to re-vegetate mangal have today sustained mangroves throughout the world. Public participation is vital to the re-establishment of mangroves in coastal areas where they have been lost. Mangroves are nature's army that defends the coasts from natural calamities including tsunami.

Ecosystem services of marine molluscs

Between 80,000 and 100,000 species of soft-bodied animals are classified as 'molluscs'. These include the snails (gastropods) with their brightly coloured shells, the octopuses and squids (cephalopods), clams and oysters, including those that produce pearls (bivalves) and some of the lesser known classes of animals called chiton, tusk shells (all found in the Indian seas) and two other classes that are not found in our waters. With this

introduction Dr J T Jothinayagam, Officer-in-Charge, Marine Biological Station of the Zoological Survey of India oriented the participants to the world of molluscs and their importance to human well-being.

Within the coastal and marine ecosystems, molluscs are found in the coral reef, mangroves, mud flats, sandy shores, rocky shores and sea grass beds. After butterflies, it is the mollusc shell that has lured trinket collector's worldwide. Shell collection has been an age-old hobby driving humans to pay enormous sums to possess an 'exotic' specimen. As such a shell called the 'Glory of the Sea' (*Conus gloriamaris*) and another 'Glory of India' (*Conus miline-edwardsi*) fetched over US\$ 2000 and US\$ 800 a piece respectively in 1957. The famous 1887 novel by Francesca M Steele titled '*Glory of the Sea*' was inspired by the former species of mollusc!



Conference Session in Progress

Most coastal civilizations had used the money cowries (*Cypraea moneta*) as their currency. Even today we find this shell being used in fortune telling and certain rituals in India. Seven other species of cowries including *Cypraea tigris* have been exploited heavily for the international trade. In 1877, 45 tonnes were exported from India of which 12 tonnes went to the US. Shells used in craft are in great demand in India, especially in the Andaman and Nicobar Islands. The shell-crafts industry in Mumbai processes 1200 tonnes of shells annually. Other major shell-craft units are found in Kanyakumari, Chennai, Hyderabad, Puri, Diga, Port Blair, etc. Much of the shells that meet the demand are sourced from the Gulf of Mannar in Tamilnadu and from the A & N Islands.

In India the sacred chank (conch) assumes great significance. In the early Tamil civilization (2000 years ago) ornaments made of the chank were widely used. In West Bengal the livelihood of 5000 families depend on the chank as the demand within the State is in the tune of 2.4 million shells. The direct market value of shells is enormous and hence there is a tendency to over-exploit these marine resources all over the world.

The other major monetary contribution of molluscs to any country's economy is in the form of pearls. The best and widely known pearls are borne by the oyster species *Pinctada fucata*. There are however five other species of *Pinctada* that are exploited in India for their pearls. Dr Jothinayagam went on to highlight the use of shells in calcium and lime industries and in the biomedical industries. The food value of molluscs is considerable. And as a result of the multiple use value of this group of animals, many species have become rare and endangered due to over-exploitation. There is an urgent need for drafting and adopting a 'code of conduct' while harvesting molluscs throughout the world.

Coral reefs and the coastal and marine ecosystem

Coral reefs are only next to the tropical rainforests in the magnitude of biodiversity and ecological complexity. Nevertheless, the reef is often more colourful (to human eyes) than the rainforest when seen under bright light and has offered a lot more aesthetic and recreational services to people all across the globe than the rainforest *per se*. Coral reefs are normally found in the shallow and warm tropical seas. While they do serve as natural barriers that protect the beaches from the waves and currents, the ways in which the coral reef community is linked with the rest of the coastal and marine ecosystems is often bewildering.

According to Dr Rohan Arthur an expert on coral reefs who works with the Nature Conservation Foundation (Mysore) it is the intricate life histories of the corals and their ecological linkages that determine the survival of the reef community. However, these linkages are not readily seen or understood by even the biologists. For

instance, there is intense competition for space and food between the coral animals and algae. In the midst of such competition, where and how the coral reef emerges successful is determined by the substrate, water currents, temperature and of course, human interference. Coral bleaching a common symptom of deterioration in a coral reef has been linked to global warming. Reef biologists have predicted that by the year 2025 many reefs across the world may succumb to global warming or in the least lose the original community that was diverse to a species-poor community of warm-adapted corals.

Loss of coral reefs can interfere with the livelihoods of local humans as they are likely to affect fisheries in an adverse manner. For example, the tuna fishery in the Lakshadweep Islands is entirely dependent on the availability of 'bait' fishes that inhabit the coral reefs. Besides the natural threats that are emerging with global warming and the associated changes in local climate, there are human pressures in the form of coral mining (for constructions), over-fishing and unregulated tourism that are slowly degrading the coral reefs and the living community of organisms that they support not only in India, but also worldwide.

Sea turtles – the sea's ambassadors

Birds are known for their long-only other animal that matches migratory birds is the marine beaches where they were born location, turtles may cover a Dr Karthik Shanker said. Dr Ashoka Trust for Ecology and described the role that sea beaches across the globe. They 'ambassadors of the seas'.

New Book from INSEE family
**ECONOMICS OF ENVIRONMENT
 AND DEVELOPMENT**

Edited by
Pushpam Kumar
 Published by Ane Books, New Delhi,
 Price Rs. 795/-

distance annual migrations. The the distance covered by turtle. In returning to the in search of the best nesting distance of 15,000 km is what Karthik Shanker a Fellow of the the Environment, Bangalore turtles played in linking the are rightly called the

Seven species of sea turtles are known globally of which 5 visit the Indian coasts and breed annually. The most widely known and abundant species of sea turtle in India is the Olive Ridley (*Lepidochelys olivacea*) the turtle of Gahirmatha, Orissa. After describing some of the unique and rather mysterious habits of sea turtles, especially their ability to return to their place of birth (landing within 10km of the site despite the long migration and the many years that lapse between birth and adulthood) Dr Shanker drew attention to the fact that in these animals the number of males and females that hatch each year is determined by the temperature at which the eggs are incubated. Higher incubation temperatures lead to an all-female brood – a matter of concern to all those who are anxious about the environmental impacts of global warming.

The rookery in Orissa is the largest for the Olive Ridley in the Indian Ocean (if not in the world) and has been considered by biologists as the 'cradle of the Ridley'. Modern tools of molecular biology have helped in deciphering the turtle's kinship across the seas. Simple tags placed on migrating turtles have answered questions regarding their movements – many Ridley turtles that were tagged by the Wildlife Institute of India along the coasts of Orissa were later caught in southern Tamilnadu and Sri Lanka!

Other marine reptiles

Dr Bivash Panday, a wildlife biologist from the Wildlife Institute of India, Dehra Dun, discussed the roles that reptiles played in the coastal and marine ecosystems. Some of the world's largest and most dangerous reptiles such as the saltwater crocodile and the king cobra are common in the coastal areas of India (especially the mangroves of Orissa) and Southeast Asia. The presence of these reptiles, including the water monitor lizard – the second largest lizard in the world, in mangroves is an indication that the ecosystem is 'healthy'. The monitor lizard may be described as the 'vulture of the reptile world' as it keeps the beaches cleaned of all carcass and offal.

The king cobra and sea snakes have been sought after by the biomedical industry for their highly potent venoms. When the sea turtles indulge in the mass nesting in Orissa – the popular *arribada*, many eggs get washed into the sea by the tides and due to the erosion. These eggs are an important source of food to many species of fish that the fishermen harvest bumper yields of certain choice fish during the season.

A synthesis

Against this backdrop, is economic valuation of ecosystem services really justified? Responses from the panellists (the speakers) seemed to suggest 'not all components of biodiversity can be valued in the monetary sense'. It was felt that the systems adopted by the International Union for the Conservation of Nature (IUCN) in assigning conservation priorities to plants and animals (as that in the Red Lists and Red Data Books) were more realistic and ecologically meaningful than monetary values. However, since these 'values' or 'conservation priorities' do not meet the aspirations of people in general and policy-makers in particular, systems of economic valuation are gaining strength globally. One serious flaw in the process of economic valuation of biodiversity and their services is the tendency to club human beings as a single homogeneous user group. For instance, is it alright to treat a honey-gatherer in the mangroves of Orissa on par with a corporate in Dabur who markets the product? Just as the world's ecosystems are sustained by millions of living organisms that have diverse ways of utilizing the earth's resources, it has to be recognised that humans are also heterogeneous – each community's needs and aspirations and the resultant impact on the ecosystem being quite different. A good system of economic valuation of biodiversity and ecosystem services should be sensitive to these considerations. □

**The Fourth Biennial Conference of INSEE on "Ecology and Human Well Being held at
Indira Gandhi Institute of Development Research, Mumbai, during June 3-4, 2005.**

Overview Of The Conference

Madhu Verma*

1. INSEE has been providing a very good platform since 1999 through its Biennial conferences, roundtables & Workshops, newsletter to academicians from various disciplines, professionals, live department people & various Government & Non Government Organisations to share their work & experience & express their views such that on holistic approach developed and appreciation can be inculcated for different disciplines which in turn express different dimension of the same issue or problem. The 4th Biennial Conference of INSEE on Ecology & Human Well Being has also been an effort in the same direction.
2. The fourth Biennial Conference of the Indian Society for Ecological Economics (INSEE) began on 3rd June 2005 with the welcome remarks by Dr. Sudhakar Reddy, Local Organising Secretary and Professor of Indira Gandhi Institute for Development Research.

Dr. R. Radhakrishnan, Director, of IGIDR, Bombay in his welcome address highlighted the role of Ecological Economics in overall development process and the role of this conference which is designed to investigate the questions of Ecology and Human Well Being. He mentioned that it is time that we should show deep concern on the humanity future & realize the necessity of transition to sustainable development. He hoped that the lessons of this conference contribute to a fundamental re-evaluation of global ecological relationships & to the development of sound values & goals.

3. The Conference theme that is Ecology and Human Well Being was introduced by Dr. Pushpam Kumar, Secretary, INSEE, who highlighted the mission of INSEE and mentioned that through its activities like Biennial Conference, workshop, policy round table and seminar, INSEE has been making concerted effort towards furthering the understanding of ecological economics. Issues in substitutability of man-made capital for natural capital, valuation of ecological functions, efficiency, scale (physical size not the economies of scale), thresholds and uncertainty and the need to bridge the gap of knowledge and epistemology are some issues which have commanded a central place in INSEE's priority. Conferences in the past clearly demonstrate this. While the first conference was on EE for SD, the second was on Water, livelihood and Ecosystem services. The third was on Biodiversity and Quality of Life. The essence of these conferences always revolved around the interface of science and policy with intention to improve human conditions.

INSEE shares common concerns of other regional societies for Ecological Economics hailing from Europe, US, Canada, Brazil, Russia and many others, concerning the limitations and 'reductionist' approach of neoclassical

* Joint Secretary, INSEE

economics to deal with the problems of environment and ecology, it also attempts to provide a viable and methodologically robust but empirically supported alternative. It exposes the mechanical outlook of neoclassical economics in order to work with conviction towards critical cultural-traditional and social contexts, which shape the management practices for ecology, and economy as the former ignore these factors. In this context, it is extremely relevant when INSEE decides to hold its Fourth Biennial Conference in 'Ecology and Human Well Being'. Ecology and ecosystem provide an array of goods and services to the humans but their contribution remains blurred in accounting and valuation, although the impact of those contributions happens to be profound.

He highlighted the role of INSEE in the transformation process of Indian economy and said that the process of reforms in domestic and external sector is continuing but its impact on various aspects of ecosystem and well being needs extra attention from academic fraternity as well as development practitioners. As the discipline of economics has never been monolithic so is the impact of changing economic policies on natural resources, their management and the overall impact on different constituents of human well being (MA, 2003). The issue of tiger conservation and rights of tribal people is debated and discussed all around and in this context, it is of extremely contemporary relevance that INSEE has chosen this theme of 'Ecology and Human Well-Being' for its Fourth Biennial Conference. He concluded his address by giving structure of the conference & the relevance of its five sub themes covered through five technical sessions.

4. Dr. N.S. Jodha, President, INSEE in his Presidential address opined that Ecological Economics as compared to many other disciplines, exhibits sharper focus on understanding and addressing ecosystem- social system links and their complementarities in achieving sustainability goals. Because of emphasis on sustainability as a central concern, trans-disciplinary approaches to research and development, sensitivity to human dimensions of natural resource management, balancing of livelihood options and sustainability dimension of resource use are accorded primacy in the research and discourse. Accordingly, the disciplinary thrusts of Ecological Economics appear to match better with the imperatives of multiple components of emerging scenarios of nature-society interactions. At the same time the above thrusts are full of challenges. The latter in turn are rooted in the broad circumstances and factors historically shaping and guiding the research and reward systems in both natural and social sciences, especially in the developing countries.

But despite concern for multi-disciplinarily, general rule so far is domination of individual disciplines (e.g. economics over other involved natural and social sciences as clearly revealed by INSEE membership and papers in this conference). Similarly, despite concern for human dimension, the past practice of treating communities and their perspectives as "objects of study" rather than involving them as contributing partners in understanding problems and identifying solutions dominate most of the research under Ecological Economics. Similarly, the supply driven, top-down, prescriptive type of approaches to understand and amend nature-society interaction is as strong as in the past. The peer domination of the discourse and possible alternation in it is as yet not substantially declined, as could be verified by ratios of young and senior scholars promoting Ecological Economics. Related to the above is imbalance between the academics and other (e.g. policy-makers/practitioners, activists and community workers) engaged in promoting cause and application of Ecological Economics.

The purpose of above comments is not to belittle the enthusiasm, activities and (in some cases) excellent impact making work of EE workers. Instead, intention here is to provoke the fellow members of INSEE to think, how we address the above imbalances. He ended by putting a question that "do we want INSEE to develop as a "forum of learned scholars" only or a movement, where multiple stakeholders can collaborate and make their respective contributions to human well being in different ecological settings on a sustainable basis.

5. Prof. Juan Martinez - Alier, President ELECT, ISEE and Chairman of Inaugural Ceremony started his address by giving his views on Metabolic Profiles of Economies. He mentioned that the notion of "metabolism" applied to the economy is not new. Liebig's influence on Marx. Podolinsky's study of energy flow in agriculture (1880). There is an essential distinction between endosomatic and exosomatic uses of energy by humans. He used Indicators and indices of (un) sustainability to distinguish strong & weak sustainability. He considered work on "weak sustainability" (economic valuation of environmental services and environmental damages) a necessary element, because it is socially relevant in a market society. In "strong sustainability" we need physical indicators/indices like Material Flows / Energy Flows/ HANPP.

He further elaborated Social Metabolism. He mentioned that we do not aspire (only) to “internalize negative or positive externalities” back into the price system rather should also recognize the economy as a system open to the entry of energy and materials, and to the exit of waste.

He said that there has been much advance in the study of Material Flows. Eurostat has published results for European Union countries 1980-2000. He put a question whether it is this done yet in India? He said that we separate biomass (as in the biomass budgets in Karnataka, fossil fuels, and other minerals (for metal ores), and building materials. He further mentioned that by looking at Material Flows we may improve our understanding of the link between Ecological Economics and Political Economy. Ecological Economics studies with a variety of methods the relations between the economy and the environment. Political Ecology studies (in my view) “ecological distribution conflicts”. To complete the characterization of the Metabolic Profile of a country or region we need also statistics of Energy use (not all of them included in Material Flows already: nuclear, hydroelectric, apart from biomass, fossil fuels) and we need statistics on the Human Appropriation of Net Primary Production (of biomass)- H. Haberl’s recent work on HANPP and loss of biodiversity in Austria is of great importance.

He raised a question whether this type of work being done in India? Relevant to mention whether LPG substitutes completely for fuelwood and dung as fuels. He gave an example of Human Appropriation of Net Primary Production (HANPP) and Mangroves where the biomass production of the untouched mangrove is much greater than the actual biomass production of the shrimp farm. Therefore it goes beyond the the assessment of “strong sustainability”, for which we require Physical Indicators or Indices (MF, Energy flows, HANPP

Since social, economic, physical indicators are non-equivalent descriptions of reality, an integrated assessment cannot be money-reductionist nor energy-reductionist, for the matter.

He concluded by saying that challenge for societies like INSEE lies in making the indicators of social metabolism relevant for politics and policies? Some of them are already relevant: carbon dioxide statistics, for instance. Sometimes, discussion starts in a academic contexts, e.g. on Material Flows or HANPP. Then some statistical offices pick them up (it is the case already with Energy statistics, it is beginning to be the case with MF). Then, there is a third step here social or political actors will perhaps use the physical indicators for public arguments. However, the statistical supply of Physical indicators does not always create the social demand to use them.

6. The programme then begun with various technical sessions which proceeded as per the following :

Technical Session – I “Ecological and Social Resilience”

The session began with research finding for building the case for social resilience with discussion on the need for mitigating it through a range of institutional and policy interventions for resource allocation thereby affecting the measure of well – being and value of wealth of society. Concern for ecological and social resilience were deliberated upon for the need for strategic and tactical measures for enhancing resilience power. Presenters stressed the need for improved institutional frameworks with support from governing bodies, local institutions and policy reforms. The session went ahead with broader issues of human well-being and sustainability with attempt to focus on operation criterion for sustainable development. Discussion deliberated on improving current inefficiencies of institutions and economy via macro-economic indicators to account for natural and social capital with issues of genuine investments in case for ecological sustainability. Arguments were built to support the issues of weak and strong sustainability using sustainability as management tool.

Technical Session – IB “Ecosystem Services and Quality of Life (Wetlands)”

This session initiated with the discussions on water pollution linkages with loss of biodiversity and impacts on fish harvested in Digha fishery. This twin problem has been addressed by modeling an aggregated Gordon-Schaefer while integrating economic biodiversity index and an environmental quality variable under different biodiversity scenarios. It is found that there exists a trade-off between economic biodiversity conservation and profit maximization. Policy measures have to be so designed as to minimize the level of conflict between them. Research findings from a bio-economic model concluded that technological change leads to an expansion of aquaculture industry and contraction of the wild fishery. This result is important from the point of view

of policy makers and emphasizes on the need for defining more socially and ecologically responsible aquaculture industries that enhance traditional fishery and reduce current user conflicts that are in existence now. The session taking a lead from the earlier discussion went on for study detailing the economic valuation of some selected wetlands in the Burdwan district of West Bengal. It presented before the audience the estimated indirect use values of wetland resources in terms of the environmental and ecological services it provides to support current production and consumption of fisheries.

Technical Session – IIA “Ecosystem Services and Quality of Life (Land and Protected Areas)”

The session began with a discourse on management of protected areas from purely conservationist strategies to participatory approaches with a wide range of options that combine different elements of resource sharing, market regulation and privatization. This gave a way to an analysis that the cost of bio-diversity loss and the development of appropriate institutions and incentives should primarily be a local exercise. In another research finding, it held an investigation exploring the relationship of current land use, crop productivity with external factors like climate, fertilizer use and soil quality. The discussion went ahead with developing indices for land degradation through Ranking method, Index method and Principal Component Analysis (PCA). Eventually a need was felt for the on adoption of integrated pest management practices for sustainability and cost effectiveness also proving to have positive environmental impacts.

Technical Session – II B “Policy Reforms and Sustainable Development”

The session began with livestock policy synthesis with its direct and indirect linkages with watershed development approach for improving land management practices enhancing livelihood option for rural people. Livestock census data was put on to support the imperative need for integrating the livestock management options in various watershed development projects across various states of India. The discussion furthered to issues of globalization and sustainable development with the economic and environmental conflicts inbuilt in the theoretical basis of the governing international bodies. Argument was built to present before a case of conflicting interests of economic and environmental globalizations in context of developing countries with special reference studies from India. Discussion went ahead with facets of unsustainability of economic globalisation, development of pollution heavens and irony of Kuznet's curve for development case in countries in India, marching ahead on the path of development. Issues of equivalence of economic globalizations and sustainable development were raised with need for more empirical evidences for holding market forces solely responsible for environmental degradation. The session concluded stressing the need for harmonization of various Multilateral Environmental Agreements with international trade directives under WTO regime and use of market forces for technological innovations for better resource use and pollution prevention.

New Book from INSEE family

BIODIVERSITY AND QUALITY OF LIFE

Edited by:

Nirmal Sengupta and Jayantha Bandhopadhyay

2005, Published for the INSEE by McMillan India Ltd., New Delhi, Pages 353, Price Rs. 850/-

This book incorporates a sensitive and diverse assemblage of the various ideas in the discourse, put forward during the 2003 INSEE Conference on ‘Biodiversity and Quality of Life’, organised by the Centre for Development and Environment Policy at IIM Calcutta. The volume has metamorphosed into an interesting and useful compendium of select papers containing a wide array of experiences from conceptual analyses to field level case studies. The volume benefits from the valuable contributions of biologists, economists and ecologists, policymakers, environmental activists, alike, most notably, Gopal Kadekodi, Charles Perrings, Kanchan Chopra, Mohan Munasinghe, Ashish Kothari, Jeffrey McNeely and Pushpam Kumar, among others. Selected papers presented in the technical sessions on the five sub-themes – Coastal Ecosystems, Desert and Dryland Ecosystems, Mountain Ecosystems, Wetlands and Mangrove Ecosystems and Finding Options – explore the recent trends and possible application of new tools that could help make the quality of life on Earth better and more sustainable.

Plenary Session I : New Environment Policy of India:

The panelists presented before the audience their concerns and viewpoint to the proposed draft of the New Environmental Policy. 2004, The issues raised ranged from corporate response to proposed mechanisms of "Precautionary Principles and Polluters Pays Principle" for technological innovation and environmental management to very basic fundamental issues of policy formulation and its effective implementation in Indian context of rampant corruption and lethargic bureaucratic and operational strings attached with it. The environmental management principals were also linked to broader debate of putting Development or Environment on First Priority for policy planners. The session discussion met with variety of responses from the audience of integrating environmental concerns for each project undertaken irrespective of scheduled ministry or department henceforth, effective enforcement measures, relevance in current local and global context and harmonization of proposed policy with existing policy and laws for environmental management and protection.

The **second day's** session begun with two simultaneous sessions on Institutions and Governance and Social perception and limitation to Valuation of Ecosystems in the morning session which were followed by two simultaneous sessions on Valuation of Ecosystems and Their Services (Land Resources) and Community and natural resource management. The post lunch sessions were conducted on Collective action for Ecosystem management and sustainable land use management. The technical sessions were then followed by second plenary on fragile ecosystem and vulnerable livelihoods. The session wise overview of second day's proceedings are as follows:

Technical Session – III-A : Institutions and Governance

It emphasized the inclusion of stakeholders' perception for project formulation and implementation for better participation and governance. Different theoretical models were presented to include these dimensions to the traditional approaches to CPR management. Discussion went ahead with environmental governance and existing administrative legal structure in India with special reference to role of green initiative of judiciary. Various recommendations were proposed for effective administration of environmental laws with new means for compliance by industrial units.

Technical Session – III-B, "Social perception and limitation to Valuation of Ecosystems."

The session started with discussion on urban wetlands and need for prioritizing the process of urbanization which generates the greatest volumes of wastes and pollutants as also the large scale conversion for land-uses. The study attempted to explore people's perceptions and preferences regarding the wetlands of Kolkata. The next study focused on the question of justifying the benefits that would accrue from the initiative taken to generate degraded lands. It also spoke about looking for mechanisms to value the forests in entirety. Carrying on with the lead the next paper advocated the use of new approaches for measurement of welfares, discussing to a great length the Index of Sustainable Economic Welfare (ISEW). The last paper suggested some practical tips for overcoming barriers to limits of valuation of ecosystem systems in developing countries in particular besides some recommendations for the same.

Technical Session – IV-A "Valuation of Ecosystems and Their Services (Land Resources)"

Growing awareness for the benefits of ecosystem services got reflected in the discussions of the session with research finding ranged across South Asian Countries. It detailed the use of various valuation techniques for ecosystem services rendered by different ecosystem ranging from mangroves to wetlands. It also reflected the need of carefully using the valuation techniques to prevent biases and narrowing down the wide variability of results in the valuation findings.

Technical Session – IV-B. "Community and natural resource management"

The session was initiated with the focus to develop a framework for prioritizing ecological issues with forest management through Dalit participation in conserving the ecology both at the micro and macro level. The next paper took up a broader view and raised a pertinent question that is our policies providing enough incentives to promote community participation? It looked at Social, Economic and environmental aspects of the query. The next paper carried on with these multifarious aspects and tried to study the status of food security and vulnerability among RPF members of self help groups (SHG) who have adapted and used appropriate technology and eco-friendly inputs in agriculture. The final paper brought a new aspect of Climate

Change in the discussion and tried to raise the problems and infrastructure services that could be affected by the same.

Technical Session – V-A “Collective action for Ecosystem management”

The session initiated the discussion on collective participation for conservation and environment protection with examples from cooperative fisheries in Kolkata, forest reserve in Karnataka to Sariska tiger reserve in Rajasthan. Various issues related to human-forest interaction, dependence and management were detailed to bring out clarity on the underlined issues. Concerns are raised to careful use radical choice model in congruence with field observation for minimizing the error from the research findings.

Technical Session – V-B: “Sustainable land use management”

The discussion started with role that can be played by Multiple Goal Linear Programming in land use planning. It tried to approach the objective keeping in mind the various set or constraints. It tried to bring out decision support systems for quantitative land evaluation. The next paper raised an interesting question on the usage of irrigation water. It further discussed a method to quantify the non irrigation uses of canal water and assess the value of the same. The final study found that over the years cropping pattern under shifting cultivation has undergone significant changes mostly in favour of market economy. The paper ends up with the communities' preference of programmes and policies for sustainable development including the planning for land use and reforestation.

Plenary session – II: Fragile Ecosystem and Vulnerable Livelihoods

The panelist begun the session with the importance of fisheries and their production regimes in the livelihoods of people. The consequences of the shifting plan priorities from production, exports, increasing subsidies and port facilities and specially the 9th and 10th plan focuses on Maximum sustained yield was highlighted. They showed concern over the changing policies relating to fisheries management have impacted the livelihoods of the fishermen community. The cautioned that we need to be more concerned about the sharks on the land than the lack of fish in the sea. Another panelist through light on the fragility of an ecosystem and explained that an ecosystem is a system of interaction and is a continuous process. Ecosystem function is a function of quantity or scale and its currently put to work on limits which are artificially set and strangely various components of ecosystem are used as ecosystems. The fragility of an ecosystem is like a broken thing which can be repaired but cannot be restored. Absence or presence of some species is a reflection of the broken linkages in an ecosystem. The species are said to be the currencies in an ecosystem's economy. Due to degradation of ecosystems the vulnerability of livelihoods dependence of people has increased. Today we can find basically two types of ecosystem people viz.; traditional like honey gatherers and modern like tourists guides.

It was mentioned that we need to understand the factors that make the ecosystems fragile. Due to these factors the ecosystems have degraded and the livelihoods of many people has been lost completely. Three solutions were prescribed basically which include rehabilitation

Forthcoming Events

Ninth Biennial Conference of the International Society for Ecological Economics (ISEE) on **Ecological Sustainability and Human Well-Being**, on Dec16-18, 2006, New Delhi India (www.isee2006.com)

The Second National Conference of the Western Ghats Forum

Theme: 'Integrating Science and Management of Biodiversity in the Western Ghats'

Dates: December 1-3, 2005

Place: Coimbatore

Contact: Dr Lalitha Vijayan, Director-in-Charge, Salim Ali Centre for Ornithology and Natural History, Anaikatty PO, Coimbatore 641 108; phone: 91-422-2657103

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Dr R J Ranjit Daniels, Coordinator – WG Forum, Care Earth, No 5, 21st Street, Thillaiganganagar, Chennai 600 061; phone: 91-44-55435841

National Symposium on **'Conservation and Valuation of Marine Biodiversity'**

Dates: December 26-28, 2005

Place: Chennai

Contact: Dr J T Jothinayagam, Convener and Officer-in-Charge, Zoological Survey of India, Marine Biological Station, 100 Santhome High Road, Chennai 600 028; phone: 91-44-24642680

&

Mr Sushil Kumar Sen, Office Manager, INSEE, c/o Institute of Economic Growth, University Enclave, North Campus, Delhi 110 007; phone: 91-11-27667101

of people, creation of protected areas and involving communities in the management of the ecosystems. But its shall be a great challenge as to decide which option to be picked up

Conclusion:

I also must not forget to mention about the momentum that we gathered during the one day Pre- conference workshop that we had on 2nd June which was attended by some of INSEE conference participants. The workshop on 'Ecosystem Services is Coastal & Marine System' covered a wide any of topics ranging from the understanding of Mangrove Ecosystem, between Coral reefs & MES & Reptiles & MES. We acknowledge the hard work done by Dr. Ranjit Daniels to rope in excellent conservation biologists to speak to economists. I also sat through Workshop, I can very confidently say on behalf of all the participants that the Workshop was very fruitful. So the academic experience in total was very enriching. I must also not fail in my duties to mention about the non-academic & cultural as part of the conference. Yesterday we had an enchanting experience during the Kuchipudi recital & a gastronomic enjoyment over dinner at the Director's residence. We are indeed thankful to the organizers for same.

Excellent arrangement & warm hospitality extended to us. We look forward for many such occasions & interactions in various ways INSEE has been sending findings of the past conference to the government and it shall be the case for this conference. We are sure that the findings shall provide an enriched and useful input for various policies of the government. □

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