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**Survey of Existing Capacity in
Environmental Economics
in India**

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February 1994

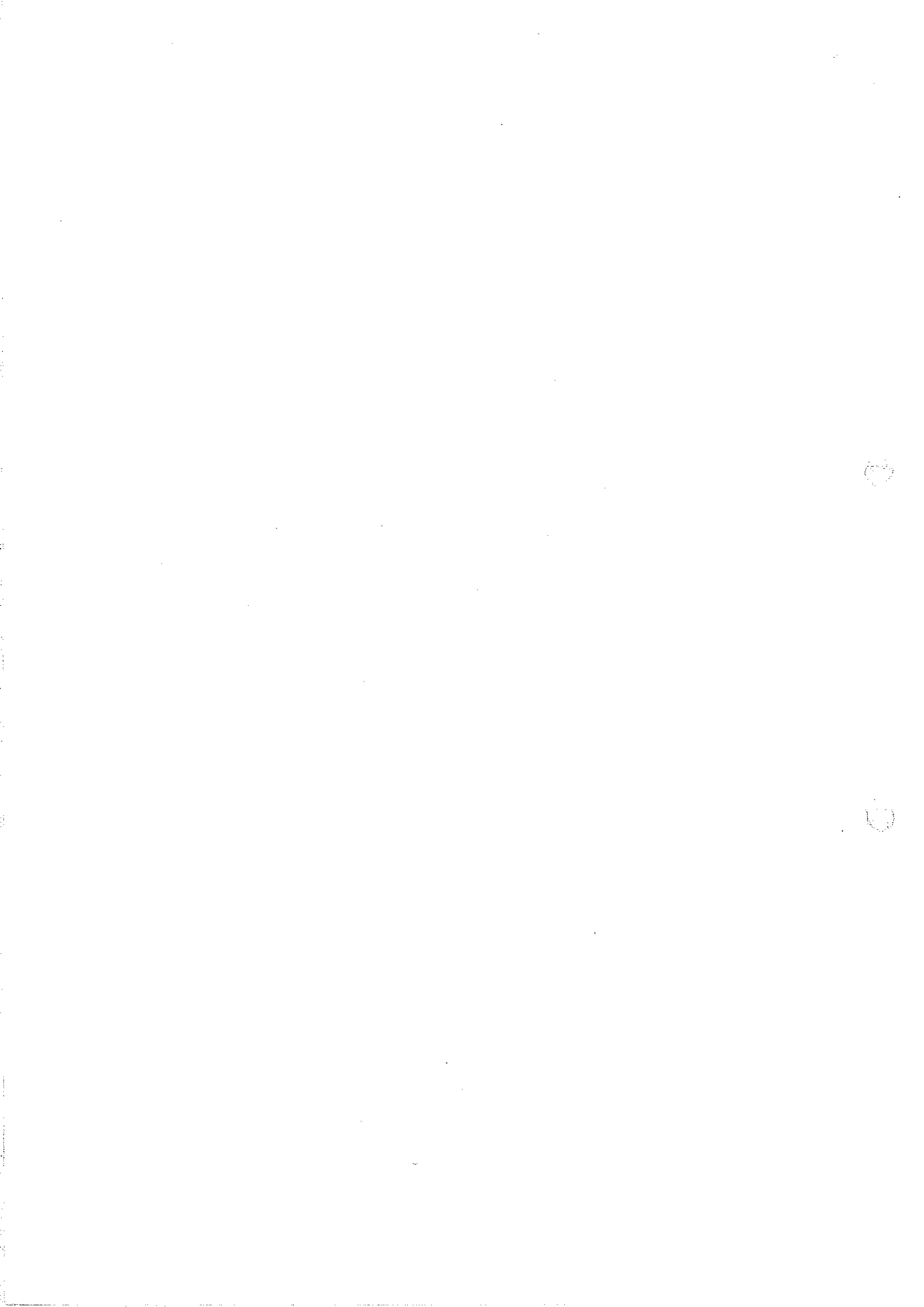


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Preface

This report has been produced as a part of the institutional collaboration between the Environmental Economics Unit (EEU), Department of Economics, Gothenburg University, and the Swedish International Development Authority (SIDA). As a part of this collaboration the EEU has established contacts with some prominent researchers in SIDA's recipient countries. One of these is Anil K. Gupta Professor at the Indian Institute of Management in Ahmedabad and Coordinator for the Society for Research and Initiatives for Sustainable Technologies and Institutions, who has carried out this survey. Acknowledgement should also go to Ms. Sanjukta Sarkar who provided very valuable help in tabulation and compilation of data.

The results constitute a point of departure for SIDA support in environmental economics activities in India. Another purpose is to facilitate interaction between the identified resource persons and SIDA's Development Cooperation Office and other institutions/consultants involved in development projects. Hopefully the report will also be of use to the economists themselves.

The survey consists of introduction and conclusions by Prof Gupta, a list of 44 identified resource persons at 27 institutes with a brief description of specialization, existing and planned courses etc., a compilation of subjects and resource persons, and a bibliography of available Indian literature on Environmental Economics.

As noted by Prof Gupta this report is not complete. Environmental economics is a rapidly growing area and the number of resource persons increases steadily. We hope that this development will be further strengthened by this report.

1. Description and review of the survey

Introduction

There are some who assume that the nature is like any other industry in which there is continuous production, with a flow of raw materials leading to economic benefits. There are others who believe that the rights of human being are the most important. Even among human beings, the rights of only those who are alive today are given priority over the ones to be born. These are the biases evident at global level and are quite deep seated. The recent research on sustainable resource use preserving the interests of not just the future generations but also the sentient non human beings is aimed at correcting this bias. Indian policy though suffering from the same growth and consumption oriented bias is slowly showing some sensitivity to the disastrous consequences of Bhopal Tragedy and other externalities.

Environmental economics is a relatively new category in the field of economics though the research on the topics covered by environmental economics has been done in India for a very long time. This research was often classified under resource economics, agricultural economics or just plain economics. The earliest publication in environmental economics, found during this survey, dates back to 1958.

This survey was conducted in selected universities and educational institutions in India, to seek information regarding the nature of professional competence, kind of research work done, the courses offered or planned to be offered and the literature available in the field of environmental economics.

The overall response from the respondents was very encouraging as all of them showed a genuine interest in knowing the status of environmental economics in the field of academics in India.

A bibliography was compiled by collecting the list of publications of the respondents, and the literature available in Indian Institute of Management-Ahmedabad (IIM-A) library. All those publications which interface between economics and environment were included in the bibliography. The publications were then sorted out according to the aspect of environment these were dealing with.

No effort has been made in this inventory to summarize the content of the research and teaching going on in Indian institutions. This inventory and the attached bibliography should merely serve as an introduction to the potential of any further work in this field. I have made a very sincere effort to contact all the relevant Institutions and elicit as much widespread information on the subject as possible. However, there are obvious gaps. These occur partly because some of the colleagues would not like their work in economics to be classified under environmental economics. It is a principled stand and I respect that. Some others must have been busy not to have responded to our questionnaire. In some cases, the slip may be entirely mine. I request the colleagues to send revision to this list so that a more comprehensive source book could be prepared on the subject. Undoubtedly it will

serve the interest of an emerging discipline and help young scholars.

Review of the survey

Of the 60 respondents from 27 institutions, 44 were selected as competent in the field of environmental economics based on their field of study and work and also interest in the subject matter.

Due to a growing interest in the field of environmental economics some institutions like the Institute for Socio-Economic Change, Bangalore Institute of Economic Growth, New Delhi, Madras Institute of Development Studies, Madras, Centre for Research in New International Order in Economics, Madras, and the Centre for Development Studies, Kerala offer a course in environmental economics at the M.Sc. and Ph.D level. Other institutes offer this course under the name of resource or agricultural economics. It is usually treated as part of a course in environmental studies or economics. IIM Calcutta is planning to offer environmental economics as a part of their course in environmental management in the coming academic year. Similar courses are planned at IIM Ahmedabad as a part of specialization package in agriculture which is part of a two year post graduate diploma in management and fellow program in agriculture (equivalent to doctoral programs).

About 109 publications (29 % of the total) are found to be conceptual in nature (Table 1). Most studies deal with hypothetical cases involving speculation about possible outcomes with different sets of assumptions. Quite a few of the papers make a comparative study of secondary data. Some use a game-theoretic perspective. Very few publications are found in the area of institutional economics. The likely impact of changes in demand and supply of a resource on the environment is discussed in most other papers.

About 112 publications are found on various aspects of land economics (Table 1). The land management (40 publications) seems to have been of most interest to researchers in India probably because of the variability of land profile all over the country and the numerous problems related to it. Given the agrarian nature of Indian economy, it is not surprising.

Water and forests are two resources which have acquired considerable importance in recent years. The economic importance of not only the wood from the forests but also that of the minor forest produce or non timber produce is gaining interest. Very little work has been done regarding environmental economic implications of minerals, air, eco-tourism, parks, drought or flood relief or absence of it, soil degradation, economics of watershed, pollution control as a collective choice problem, etc.

	Manage- ment	Deve- lopment	Degra- dation	Conser- vation	Exter- nalities	Sustaina- bility	Policies	Con- flicts	Total
Land	40	18	17	15	3	7	8	4	112
Concep- tual	30	23	11	17	4	12	3	9	109
Enviro- nment	23	7	7	5	9	7	2	3	63
Water	19	7	5	5	13	3	1		53
Forest	14	4	14	8	3	3	6		52
Industri- al	2			1	7	2	1	1	13
Energy	5	3		1	1	2			12
Mine- ral	1						1		3
Air					1				1
Total	134	62	54	52	41	36	22	17	418

Reorienting Environmental economics

Whether a development process will be environmentally sustainable or not is a question which have begun to be raised lately.

It has become clear that for sustainable development, the economy should be within the limits of the total ecosystem. To maintain the economic system it should not require inputs that destroys the regenerative and assimilative capacity of the ecosystem. The conventional measures of national income (e.g. GNP/capita) have been questioned since they do not identify the decrease in the stock of the natural capital but instead account for the depletion of resources as a net income. This calls for a refined understanding between physical events and their economic consequences as well as more developed methods to quantify and value the degradation.

Dealing with these problems is a challenge both to academic researchers and to policy makers. Still those who are affected in their daily lives are individuals and a solution requires both the use of their knowledge and their active and willing participation. Hence there is an increasing need of individuals with the understanding of the importance of sustainable development. To achieve this the individual would not only need to have a sound knowledge of the various environmental issues but also be able to do the economics of these various issues.

A report on the training needs of individuals in the field of environment prepared by IIPA

("Human Resources Development Needs in The Environment Sector") states that, the main areas where training needs to be imparted to individuals, are:-

- 1) Conservation and regeneration of forests.
- 2) Conservation of wildlife and biological diversity.
- 3) Protection of air water and land from pollution.
- 4) Conservation and regeneration of ecologically sensitive areas.
- 5) Protection of areas with special environmental problems.
- 6) Conservation of natural resources.
- 7) Protection from hazards.
- 8) Use of legal processes.
- 9) Environmental impact assessment methodology.
- 10) Environmental Management.
- 11) Environmental planning
- 12) Eco development and joint forest management.
- 13) Technological development and application.
- 14) Research methods.
- 15) Monitoring methods and technologies.
- 16) Education and awareness methods.

There is a need to pay special attention to training in environmental impact assessment. As sustainable development involves among other things the ability to assess the impact of development activities and projects on the environment. This would then enable the choosing of correct projects and developmental activities. It would also give the direction to develop new processes and technologies, that are sustainable.

Conclusions

Indian competence as apparent from the results of this survey is quite strong in some fields and not so strong in other fields. Compared to most other countries India has a high number of qualified researchers in the field of environmental economics. However, the capacity is rather concentrated and far from large enough to meet the environmental problems of the sub-continent. Reflecting the agrarian nature of the Indian economy, most efforts have been put into research concerning land and especially from a management point of view. Water and forests are two other areas that are covered to some extent. Still there is a lack of applied research pertaining to the interface between economics, environment and development.

The gaps in the teaching of courses are in the field of management of externalities, collective action problems, institutional aspects of externality management etc. The rigorous environmental impact assessment methodologies are being developed. The economics of games, parks, wildlife preservation etc., and the interface between political science and environmental economics also need more emphasis. Though the domestic supply of journals and books is rich, foreign literature is scarce for most of the institutions.

The survey shows a need for increasing competence of Indian scholars in certain fields for which summer schools in environmental economics may have to be organized. Joint

research is another possibility and not just in India but in other countries also.

2. Institutes and resource persons

Persons known to be active or have a profound interest in environmental economics but who have not responded to the questionnaire are labeled with *.

Bangalore University, Department of Geography

Jhana Bharat, Bangalore University, Bangalore 560 056

Phone (80) 3550036 ext. 239

<i>Resource persons</i>	<i>Specialization</i>
Dr. Daksha C. Barai	Urban Environment

Centre for Development Studies

Medical College Post, Trivandrum 695 011

Phone: (471) 448881

Fax: (471) 447137

<i>Resource persons</i>	<i>Specialization</i>
Dr. K.N. Nair	Natural Resources, Population, Groundwater Management
Dr. D. Narayana	Ecology, Resource Utilization

In this centre two courses are offered on Environmental Economics. In the case of M.Phil programme in applied economics, a module on natural resource management in the Indian economy is offered. The course covers the various theories relating to environment and development with special reference to India. Another course on population, environment and development is offered as part of the International training programme on Population and Development.

Centre for Research on New International Economic Order

No.1, First Street, Haddows Road, Madras 600 006

Phone: (044) 471676

Fax: (044) 474557

<i>Resource persons</i>	<i>Specialization</i>
T.D. Felix	Environmental and Resource Economics, Economic Theory
Vincent Jayakumar	Resource Economics
Dr. K. John Mammen	Development and Environmental Economics
Dr. P.J. Sanjeeva Raj	Ecology, Biodiversity, Coastal and Estuarine Ecosystems
K. Sivaprakasam	Local Finance, Institutional Economics, Fiscal Economics

This institute offers M.Phil in Environmental Economics since the past four years. This is

a one year course with two papers in research methodology and economic theory in the first semester and one paper in environmental economics and a dissertation in the second semester.

Centre for Saline Soil Research Institute, Karnal

Division of Technology Evaluation, S.S.R.I., Karnal 132 001, Haryana.

Phone: (184) 21856

Telex: 0396-218 SSRI-IN

Resource persons

Dr. P. K. Joshi

Specialization

Natural Resource Economics and Environmental Impact Assessment

Centre for Science and Environment

807 Vishal Bhawan, 95 Nehru Place, New Dehli, 110019

Phone: (011) 6475879, 6433394

Resource persons

Dr. Anil Agarwal

Specialization

Forest Economics, Ecology and Poverty

This is basically a action research centre. No courses are offered in this institute.

ICIMOD

GPO Box 3226, Kathmandu, Nepal

Phone: (977-1) 525313

Fax: (977) 524509

Resource persons

Dr. Narpat Singh Jodha

Specialization

Common Property Resource Management, Agriculture- and Rural Environmental Economics

Indian Agriculture Research Institute

New Dehli 110 012

Phone: (011) 5787501/574758

Telex: 31-77161 IARI-IN

Resource persons

Dr. Parmatma Singh

Specialization

Agriculture Economics

Environmental economics is offered as a new specialization course by the Department of Agricultural Economics in this institute. Dr Parmatma is responsible for the designing of this course.

Indian Institute of Forest Management, Bhopal

Mr. Kant is on study leave at the Faculty of Forestry, University of Toronto,
33 Willcocks St., Toronto M53303
Phone: (416) 9706196
Fax: (416) 9783834

Resource persons

Shashi Kant

Specialization

Common Property Resource Management, Property Rights,
Timber Economics

This institute offers natural resource economics as part of their post graduate Diploma course in Forest Management. Research related to forestry with an environmental economics perspective is carried out in this institute.

Indian Institute of Management Ahmedabad

Vastrapur, Ahmedabad - 380 015
Phone: (272) 407241
Fax: (272) 427241

Resource persons

Dr. Samar K. Datta
Dr. Anil K. Gupta

Specialization

Forest Management, Wasteland Management,
Management of Externalities, Building of Self-Designed
Institutions for Natural Resource Management
Trade in Natural Resources,
Environmental values of forests, Agricultural sustainability

Sebastian Morris

Dr. D.D. Tewari

*Shashi Kolavalli

*T.K. Moulik

*Gurdev Singh

*Ravindra Dholakia

*M.R. Dixit

EE is not offered as a subject. Extensive research work on this field is carried out by the persons mentioned. Most of the work is forestry, and rural management oriented. Efforts are being made to include this subject in the post graduate program.

Indian Institute of Public Administration

I. P. Estate, Ring Road, New Dehli 110 002
Phone: (011) 3317309/3715385

Resource persons

Dr. Kamal Nayan Kabra

Specialization

Political Economy and Socialist Ecology

Indian Statistical Institute

20-3, B. T. Road, Calcutta 700 035

Phone: (33) 51-6694/52-7694

Telex: 21-2210 STAT In

Resource persons

Dr. Kailash C. Malhotra

Specialization

Human Ecology, Forest- and Pastoral Economy

Indira Gandhi Agricultural University

Department of Agri. & Natural Resource Economics, IGAU, Raipur 492 012, M. P.

Phone: (771) 424481 Ext. 110

Fax: (91- 771) 424532

Resource persons

Dr. D. K. Marothia

Specialization

Resource- and Institutional Economics

Natural resource economics is taught over here as a part of the courses offered here.

Indira Gandhi Institute of Development and Research

Filmcity Road, Goregaon (E), Bombay 400 065

Phone: (22) 8400919/8402378

Fax: 8402752

Resource persons

Dr. V. K. Sharma

Specialization

Natural Resource Accounting, Monitoring and Modelling of local and global pollutants

Jyoti Parikh*

Sustainable Development in Agriculture

Institute for Socio-Economic Change

P.O. Nagarbhavi, Bangalore 560 072

Phone: (812) 355468

Fax: c/o M/s Auro (812) 320840

Resource persons

Dr. M.V. Nadkarni

Specialization

Social Forestry, Wasteland Development, Economic Instruments, Agricultural Economics

Dr. Prahaladhachar

Water Management, Agricultural Economics

Dr. Syed Ajmal Pasha

Agricultural Economics, Animal Husbandry, Forestry

EE is offered at the Ph.D. level only to students who have a background of economics. Mostly rural and forestry aspects in relation to EE are researched on.

Institute of Economic Growth

University Enclave, Delhi 110 007

Phone: (011) 7257101, 7257365, 7257288

Fax: (011) 2511737

Resource persons

Dr. Kanchan Chopra

Dr. Gopal K. Kadekodi

Dr. M.N. Murthy

Dr. R. Maria Saleth

*Bina Agarwal

*S.N. Mishra

*C.H. Hanumantha Rao

Specialization

Property Rights, Forest and Water Management, Project Evaluation, Ecological Aspects of Agriculture

Energy Economics, Forest and Water Management, Resource Economics, Project Evaluation

Economic Instruments to Control Pollution, Public Finance, Investment Planning

Ecological Modelling, Measurement of Sustainability, Institutional Aspects in Resource Management

Environmental and natural resource economics are the two subjects offered as part of the post graduate programme in Economics. Extensive research work is carried out in EE related fields. Proposal to give Diploma program in Environmental Economics.

Institute of Rural Management

Anand 380 001

Phone: (02692) 23120, 23502

Fax: (02692) 23719

Resource persons

Dr. Katar Singh

*Vishwa Ballabh

*Tushar Shah

Specialization

Land management, CPR-management, Afforestation

EE is taught as a part of the course in common property resource management and natural resource management.

Jawaharlal Nehru University

New Delhi 110 067

Phone: (011) 652438, 66676, 667557

Fax: (011) 6865886

Resource persons

Dr. A.K. Bhattacharya

Dr. Gopal Brij

Dr. C.K. Varshney

Specialization

Soil Science, Environmental Impact Analysis

Aquatic Ecology, Wetland Management

Ecology

*A.K. Attri, D.K. Bannerjee, J. Behari, S. Bhattacharya, K. Datta, G.P. Malik, B.P. Murthy, L.K. Pande, V. Rajamani, J.D. Sharma, R. Subramaniam, V. Subramaniam

Madras Institute of Development Studies

79, Second Main Road, Gandhinagar, Madras 600020

Phone: (044) 412589/412202

Fax: (044) 2350305

Resource persons

Dr. Paul P. Appaswamy

Specialization

Urban Environment, Watershed Management, Environmental Policy

*Nirmal Sengupta

EE is not offered as a course. The faculty sometimes give lectures at Centre for Research on New International Economic Order, Madras.

Meenakshi College For Women

2-d, Bhartavatsakam Nagar, Madras 600 020

Phone: (044) 415076

Resource persons

Ms. M. Korpagam

Specialization

Resource Economics and Economics of Pollution

Ms. Korpagam has been carrying out work in this field on a more conceptual level and has been teaching this subject for the past few years.

Ministry of Environment and Forests

Paryavaran Bhavan, CGO Complex, Lodi Road,
New Delhi 110 003
Phone: (011) 4361410

Resource persons

Dr. A. Damodaran

Specialization

Property Rights, Common Property Resource Management,

Dr. Damodaran has taught courses in EE and Natural Resource Economics at The School Of Planning and Architecture, Delhi.

National Law School of India, Bangalore and IIT, Madras

4a Vandananagar, Thiruvanmiyer, Madras 41
Phone: (044) 4411998

Resource persons

Visiting Prof. L. Surendra

Specialization

Resource Economics, Common Property issues and
Environmental movements

School of Environmental Science

University of Poona, 411 004
Phone: (212) 332448
Fax: (212) 331250

Resource persons

Vijay Paranjpye

Specialization

Environmental Impact Assessment, Environmental Analysis
of Irrigation and Dams, Implications of Environmental Law

*G.D. Londhe

*S.F. Patil

Poona University has just begun offering a two-year Master's course in Environmental Economics with the following courses and a dissertation paper: 1. Ecological and Economic system; 2. Environmental and Economic Analysis; 3. Economics of Agro-economic systems, 4. Global Environmental Developments; 5. Research Methodology in Environmental Economics; 6. Environmental Impact Assessment; 7. Sustainable Development and Environmental Legislation.

Tata Institute of Social Science

Unit for Urban studies, Tata Institute of Social Science, Sion-Trombay Road, Deonar, Bombay 400 088
Phone: (22) 5563290

Resource persons

A. Narender

Specialization

Urban Environmental Economics

University of Agricultural Sciences

Department of Agri. Economics, Hebbal Campus, Bangalore 560 024

Phone: (80) 331483 Ext. 8

Fax: (0091-0812) 330277

Resource persons

Dr. N. Nagaraj

Dr. M. G. Chandrakanth

Specialization

Resource Economics and Water Management

Natural Resource-, Agricultural Economics and Water Management

Agricultural economics is taught here as part of their graduation and post graduation programme. Research is also being carried out in this area both by students as well as the faculty of this discipline.

University of Madras

Chepauk, Madras 600 005

Phone: (044) 568778 Ext. 37

Resource persons

Dr. N Rajalakshimi

Specialization

Economic analysis of environment

Utkal University, Bhubaneswar

Applied Economics Dept, Utkal University,

Vani Vihar, Bhubaneswar 751 004.

Phone: (0673)52520 Ext: Economics Dept.

Resource persons

Dr. Kumar B. Das

Dr. Gyana Chandra Kar

Specialization

Environmental Economics, Regional Economics

Rural Development, Industrial Economics

EE research has been carried out though it is not taught as a subject.

Y. S. Parmar University of Hort. Forestry

Phone: 01792-3427 (Res.)

Resource persons

Dr. Ramesh Chand

Specialization

Natural Resource Economics, Agricultural Policy and Forest Economics

Courses are offered in Economics of Renewable and Non Renewable Natural Resources and in Natural Systems Assessment with Economics Valuation.

3. Subjects and resource persons

* Resource People (The person indicated by the number to the right can be found on the next page)

Environmental Studies

- | | |
|--|------------------|
| 1. Agriculture (sustainability). | * 35, |
| 2. Ecology | * 1, 17, |
| 3. Forest Management. | * 36, |
| 4. Wasteland Management. | * 36, |
| 5. Rural Development. | * 35, |
| 6. Environmental Impact Assessment. | * 7, 26, 27, |
| 7. Environmental Laws, Policies and Practice. | * 9, 26, |
| 8. Property Rights. | * 14, 23, |
| 9. Trade in Natural Resource. | * 3, |
| 10. Natural Resources (Renewable
and Nonrenewable Resources). | * 2, 4, |
| 11. Common Property Resource Management. | * 6, 12, 23, 30, |
| 12. Social Forestry. | * 33, |
| 13. Animal Husbandry. | * 33, |
| 14. Resource Utilization. | * 1, 28, |
| 15. Environmental studies. | * 6, 21, |
| 16. Environmental Management. | * 15, |
| 17. Management of Externalities. | * 39 |
| 18. Building of Self Designed Institutions
for Natural Resources. | * 39 |

Economics

- | | |
|-----------------------------------|---------------------------------------|
| 1. Ecological Economics. | * 11, 12, 14, 15, 17, 20, 30, 31, 34, |
| 2. Resource Economics. | * 8, 10, 13, 19, 22, 26, 28, 31, |
| 3. Agricultural Economics. | * 5, |
| 4. Forest Economics. | * 24, 38, |
| 5. Urban Environmental Economics | * 9, 10, |
| 6. Rural Environmental Economics. | * 33 |
| 7. Economics of Pollution. | * 19, 32, |
| 8. Industrial Economics. | * 23, |
| 9. Pastoral Economics. | * 25, |
| 10. Institutional Economics. | * 24, |

Resource persons

1. D. Narayana CDS, Trivandrum, Kerala.
2. K.N.Nair CDS, Trivandrum, Kerala.
3. Sebastian Morris IIM, Ahmedabad.
4. M.N.Murthy ISEG, Delhi.
5. Parmatma Singh IARI, Delhi.
6. Kamal Narayan Kabra IIPA, Delhi.
7. P.K.Joshi CSSRI, Karnal.
8. Ramesh Chand Y.S. Parmar Inst. of Hort. Forestry.
9. Paul P. Appaswamy MIDS, Madras.
10. A.Narendra TISS, Bombay.
11. M.G.Chandrakanth UAS, Bangalore.
12. M.V. Nadkarni ISEC, Bangalore
13. Gopal K. Kadekodi IEG, Delhi.
14. Kanchan Chopra IEG, Delhi.
15. Maria Saleth CRNIEO, Madras.
16. Katar Singh IRMA, Anand.
17. P.J.Sanjeeva Raj CRNIEO, Madras.
18. K.John Mammen CRNIEO, Madras.
19. X.Vincent Jayakumar CRNIEO, Madras.
20. T. D. Felix CRNIEO, Madras.
21. K.Sivaprakasham CRNIEO, Madras.
22. Daksha C.Barai Dept. of Geography, Bangalore University.
23. A.Damodaran Ministry of Environment and Forests, Delhi.
24. D.K.Marothia IGAU, Raipur.
25. Kailash C. Malhotra ISI, Calcutta.
26. Vijay Paranjpye Dept. of En. Sciences, Poona Univ.
27. M.Prahaladhachar ISEC, Bangalore.
28. V.K.Sharma IGIDR, Bombay.
29. Shashikant IIFM, Bhopal.
30. Lawrence Surendra National School Of Law, Bangalore.
31. Ms. M. Korpagam Meenakshi College for Women, Madras.
32. Gyanachandra Kar Utkal University, Bhubaneshwar.
33. Syed Ajmal Pasha ISEC, Bangalore.
34. Kumar B. Das Utkal University, Bhubaneshwar.
35. Samar K. Datta IIM, Ahmedabad.
36. N.S. Jodha ICIMOD, Nepal.
37. D.D.Tewari IIM, Ahmedabad.
38. Anil K. Gupta IIM, Ahmedabad.
39. Shashi Kolavali IIM, Ahmedabad.

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- Appaswamy, P. Paul, Reuse of Watershed (Max Muller Bhavan Seminar on Drinking water) MIDS, Madras.
- Appaswamy, P. Paul, Urban Environmental Management India. An Assessment Report to the Ministry of Environment and Forests, Government of India, MIDS, Madras.
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