Environmental Management


A methodology for distinguishing the more important parameters from the less important ones is described. The methodology aims at identifying and shortlisting the key parameters which ought to be studied in a given EIA situation, thereby helping in reducing time, effort, and cost of EIA. A software package INTRA (INTer-parameter Relationship Analysis) based on this methodology, has been developed.


The study estimated the B-C ratio of investment on soil conservation in two watersheds of Tamil Nadu and showed that the ratio was negative or very low in the initial period of investment. However the B-C ratio was favourable in the long run. The major constraints expressed by the farmers in adoption of soil conservation measures were financial, labour availability and water scarcity.


A new reagent system for the spectrophotometric determination of ethylene glycol in various environmental samples is described. The method is based on the oxidation of ethylene glycol to formaldehyde by periodic acid which is subsequently estimated by the coupling with phloroglucinol in alkaline medium. The method has been applied for the determination of ethylene glycol in motor oil, chocolate wrapper and biological samples.


Joint Forest Management (JFM) is eliciting peoples’ participation in the management of natural forests for sustainable management. The advantages and constraints in using JFM approach are discussed. The synergetic effect of biological, hydrological and sociological approaches adopted in JFM strives to ameliorate the conditions of
rural people and facilitate their co-operation in the management of adjacent degraded natural forests in an integrated manner.


Study reports the performance of granular activated carbon (GAC) in the removal of acephate contained in the effluent of a nearby pesticide manufacturing industry. In the batch study, the optimum dose of GAC was found to be 85 gm/litre for almost 100% removal of acephate from its initial concentration of 2.9 mg/litre which was found in the industrial effluent under treatment.


The Timber Distribution Scheme (TDS) included the provision of timber trees for over a fixed period of time for the repair and construction of houses, fuelwood during celebrations and festivals, repair of temples (*Devtaa* rights), timer for the repair of bridges, etc., subject to the payment of a token amount in certain cases as may be applicable. However, over the past few years, the population has increased greatly while at the same time, the TDS policies have not been revised. As a result, this has created tremendous pressure on the meagre forest resources that are existing at present. Paper attempts to highlight certain important issues related to TDS in Himachal Pradesh.


Anaerobic fixed bed reactor system is used for the treatment of cotton digestion wastewater which is generated during digestion with alkali. Substrate removal kinetics was developed using Dewalle and Chain model and pseudomechanistic models. The values of kinetic rate constant $K_2 (A/V)$, loading rate constant $K_L$, and the inhibition coefficient ($K_s$) were determined for the system.


Paper deals with the study of environmental monitoring and land use/land cover changes in the Singrauli area due to open cast coal mining and thermal power generating activity. The study was carried out using multidate remotely sensed satellite data of 1988 and 1993 and topographical maps of 1969, through visual
interpretation. The monitoring on a regular basis would help in perceiving the extent
the direction of alteractions and also in evolving mitigating measures.

0203-009. Devasigamoney Jayakumar (Wheel Axle Plant, Yelahanka, Bangalore
560064). Analysis of shop floor injuries in steel industry. Indian J Occupl Environ
Med, 6(2) (2002), 80-85 [2 Ref].

This retrospective study was conducted to study the injuries in a specific work place.
The study was conducted in the steel casting division of a steel industry. The incident
rate of the injuries per 1000 employees ranges between 42 and 61. The average man
days lost per injury ranged between 19 and 37 days.

0203-010. Dikshit AK, Padmavathi T, Das RK (Indian Inst Techno, Kharagpur, West
Bengal). Locating potential landfill sites using geographic information systems. J
Environ Syst, 28(1) (2000-01), 43-54 [16 Ref].

A Geographic Information System-based method has been presented that identifies
potential landfill areas for preliminary assessment. The regulatory restrictions, area
attributes, and site assessment criteria provided by experts and/or users have been
taken into account. The proposed method has been demonstrated by applying it to a
landfill site selection study for the Nilgiri block of Balasore district of Orissa in India.

Environmental impact assessment of mining projects – a comparative review of
Canada, Australia and India J Inst Engrs (Min Engng), 82(Feb) (2002), 45-47 [9
Ref].

The EIA procedures and contents of the assessment documents for mining projects
have been studied for Canada, Australia and India. A comparison reveals wide
differences in the contents of the EIA documents, institutional arrangements, levels of
assessment and opportunities for public participation in the process.

0203-012. Ghose MK, Giradhari L (Cent Mining Env, Indian Sch Mines, Dhanbad
826004). Impact assessment of a coal washery project on socio economic
Ref].

To evaluate the impact of a coal washery project, an investigation was carried out in
the Patherdih coal washery of BCCL (Bharat Coking Coal Ltd). The existing socio-
economic environment scenario of the study area has been discussed and the
methodology adopted has been described. The coal washery project appears to have
brought significant socio-economic development to the area. It has involved the
immigration of industrial workers in the area and opened avenues for different types
of employment.

Agroforestry in an interdisciplinary, multi-sector approach of land use. Its prime objective is over all optimization and to protect the environment and maintain the ecological integrity. Paper deals in greater length, the role of agroforestry in control of natural disasters, protection of environment and enhancement of development activities.


Paper evaluates Physical Carrying Capacity (PCC = Visitors per day) and the Real Carrying Capacity (RCC = Visitors per day) for Govind Wildlife Sanctuary (and National Park) situated in Uttarkashi District of Uttarakanchal. Ten significant routes used by people within the Protected Area have been chosen for the study. On an average, 1323 visitors visit the Protected Area in a year during the tourist season, PCC represents a parameter that the ecosystem can withstand under static conditions.


Study depicts that the satellite remote sensing data can be of great help in quick assessment and real time monitoring of existing natural resource, like water and forest and it can be effectively used for catchment area evaluation, change pattern in command area etc. Present study provides the baseline spatial database for forest manager to quickly asses, evaluate and monitor the change in forest resources/environment under the impact of the dam, any time in future also.


An assessment of Joint Forest Management (JFM) was undertaken in Uttara Kannada district, with a view to understand the progress made towards JFM goals. Data was obtained from the Forest Department with respect to the number of VFC formed, microplans prepared, memorandum signed with the VFCs, and area brought under JFM, alongside field level discussions to understand the perception of people at the local level.

The high intensity of slope of hills in Mizoram causes a significant degradation in the ground resolution of the sensor of a satellite. Consequently, the intensity of the corresponding picture element gets increased in favour of higher canopy density class owing to the adequacy in the natural vegetational growth in the State. Hence, during cover classification stage, an upper bias is introduced. The paper tries to investigate and measure the bias.


While evaluating intermittent and continuous water supply systems, consumers opinion survey was undertaken for critical appraisal of both modes of operation. With the help of a pre-designed set of questions relating to various aspects of water supply and the opinion of consumers regarding degree of service, a house to house survey was conducted in the study area of Ghaziabad and Jaipur.


Attempt has been made to compare the manual (AISLUS) and digital watershed delineation procedures on test watersheds in Hazaribagh and Bankura districts of Jharkhand and West Bengal. Besides this the benefits of digital delineation procedure over conventional (AISLUS) manual method have also been highlighted. The study indicates that traditional manual delineation of watersheds involves subjectivity in locating the ridgelines, which often leads to a slight change in the actual watershed shape and thus area.


Excessive and wasteful use of resources along with the unplanned development and inadvertent consumption is creating self destructive path in biodiversity of ecosystem due to monoculture, heavy fertilization, pest control, resource erosion, leading to soil, water, air and human health problems. It needs ecosystem management through soil, air and water conservation techniques for cost effective and future use.


The periglacial sediments deposited on the bank of the river Mandakini and sediments collected from the adjoining lake, near the snout of glacier (known as Chourabari Tal
or Gandhi Sarovar) have been studied for geochemical characteristics and their interaction with the glacial melt waters.


Paper estimates the economic value that people in an urban area in India – PTPS (Panipat Thermal Power Station) Colony in Panipat, Haryana – place upon improving the air quality. The dose-response method, based on the Gerking and Stanley model, is used to estimate the economic benefits of air quality improvement. The relatively successful application of the dose response method at PTPS colony suggests that the technique can be more widely applied in developing countries like India.


Ether and ester derivatives of thymol, 5methyl-2 (1-methyl ethyl) phenol, a natural monoterpenoid, were synthesized and antifungal potency against *Aspergillus niger, Fusarium oxysporum* and *Alternaria alternata* was evaluated to study structure-activity relationships. Thymyl ethers showed better antifungal potency than esters in overall studies.


The influence of coastal flooding on surge estimates along the coast is examined using a procedure that is different from the conventional wet-dry grid point method. The coastal boundary is assumed fixed in the present study. The mass and momentum fluxes across the coastal boundary due to surge flooding the coastal regions are modeled as sources/sinks along this boundary in the equations governing the flow field. The equations are solved using an explicit finite element scheme.


Paper describes the need for an environmentally sustainable rural development in India. The particular attention is paid to issues, like environmental education, water resources management, energy management, and forest management in rural India. The paper also describes the role of decentralization in rural development.

0203-026. Mishra Ravi, Parihar UBS (Environ Plnng Coordination Org, E-5 Arera Colony, Bhopal 462016). Geoenvironmental studies of the ton’s basin, South West

The geoenvirons of the Ton’s basin area have been analysed for evaluating the possibilities of development without destruction. The area is reeling under the impact of various adverse environmental parameters resulting due to various lime based industries. Generally, the ground water of the area is good for drinking purposes. The high concentration of TDS, hardness, sulphate and chloride were observed in some ground water samples.

0203-027. Misra VK (Soc Promotion Wasteland Dev, New Delhi). **Changing policies and system of forest management in India.** *Wasteland News*, 17(2) (2001-02), 49-61 [6 Ref].

Governments in many parts of the world including India, have in the recent past, initiated political and administrative processes for decentralised resource management. This trend is driven by the need to reduce high cost of transaction on centralised management of resources and need for a socially just, equitable and sustainable resource management.


Paper addresses the emerging concerns regarding water resources sustainability through a case study for a large river basin in India using an area-wide approach. An assessment of water resources development in the Yamuna river basin, has been conducted by evaluating present and future water availability.


Relationships of estimated construction costs to appropriate capacity parameters for each of the various major units of Effluent Treatment Plant have been presented. Review of the data for 60 plants selected for the study indicated that capacity of various plant units could be used in estimating the construction costs of various units as also the operation and maintenance cost of an effluent treatment plant.


The Marine National Park, in the Gulf of Kachchh, mangrove areas were monitored for the last 25 years. The degradation of mangroves continued up to 1985 and the
condition significantly improved due to the adoption of conservation measures. This has helped in planning various management actions to conserve this vital ecosystem. IRS data have been used in identifying dominant plant communities in many mangrove areas. This is a unique approach for providing spatial information at plant community level and can be seen as a first step towards bio-diversity assessment. Along with the mangroves, seaweed, seagrass beds and dune vegetation have also been mapped with reasonable accuracy.


The study area, an ecologically sensitive region is developing at a very fast rate in Dakshina Kannada district alone. Innovative technologies have been introduced in the area of capture and culture fisheries and also there has been major industrial development. These two aspects have led to user-user conflict and concern for environmental degradation. The study reveals an urgent need to put in place processes leading to integrated coastal management. Cause and effects have been discussed and possible remedies suggested.


The degradation of commonly used textile dye reactive red 2 in an aqueous solution by means of photocatalysis using ZnO in the form of slurry is studied. When concentration of the dye increases from 60 to 140 ppm, the rate constants vary between 0.055 and 0.019 min⁻¹. the disappearance of the dye follows approximately pseudo-first order kinetics. This method suggests the possible use of ZnO photocatalysed degradation of textile dye present in wastewater.


Study deals with the quality of locally marketed mineral water packed in bottle and pouches. For various samples the parameters, like pH, TDS, ALK, TH, Cl⁻, F⁻, NO₂⁻, NO₃⁻, SO₄²⁻, Na⁺, K⁺, Ca⁺⁺, Mg⁺⁺, DO, COD, and MPN count were selected and determined. The soft drinks available in the local market were also selected and analysed for pH, EC, TDS, F⁻, SO₄²⁻, Na⁺, K⁺, Ca⁺⁺, DO to assess their quality.


The study conducted at Sarnal in Kheda district of Gujarat, attempts to probe participation and factors affecting it and identify the determinants of participation in a ravine reclamation programme. The People’s Participation Index (PPI) in the afforestation conservation programme works out to be 51.3, with participation of landless (PPI-53.6) and marginal farmers (PPI-49.8) being comparatively higher than that of small farmers (PPI-44.0).


Environmental management scenario in the stone crusher industry sector can be substantially improved through adoption of cleaner production schemes. This would also increase the productivity of these units by way of reduced dust generation, reduced energy consumption, lesser breakdowns leading to increased plant availability.


The entire area of Shoolpaneshwar Wildlife Sanctuary has been surveyed for gathering information regarding vegetation and floristic components of the area. During the survey special emphasis has been given for enlisting the different tree species in the area. In addition the observations on biotic factors as well as other environmental factors leading to the destruction of natural habitats of plants have also been incorporated.


Paper describes an integrated approach of modern technology coupled with traditional knowledge for arriving at a Decision Support System (DSS). The DSS can be used by technical, financial and managerial decision-makers. The database elements and presentation support of the system can also be used to effectively communicate the decisions regarding environment and mining to the masses.

Maharashtra State Industrial Development Corporation has proposed an Additional Amravati Industrial Area in Amravati district covering an area of 2800 hectares. Some of the problems that may arise due to development of new industrial area are discussed. It is felt that proper management of environment concerns being faced by the existing and likely to be faced by the proposed industrial estate should receive top priority so as to achieve sustainable development in the region.


Panchayat Raj Engineering Department (PRED), Government of Andhra Pradesh installed package water treatment plants on a trial basis, in some villages in Krishna district of Andhra Pradesh. These plants consist of three stage treatment comprising of pulverized quartz filter bed, activated carbon bed and micro filter unit followed by disinfection. Paper presents the findings and conclusions of the performance evaluation study.


In Nayagram block of West Midnapore Forest Division (West Bengal) sabai is grown extensively both inside and outside forest areas. There is immense scope in value addition of this produce to augment the income of the protection committee members. That will also help the institutions to achieve economic viability. Rural Development Centre of Indian Institute of Technology, Kharagpur is imparting training to Forest Protection Committee members on processing, value addition and exploring markets of the sabai based products.


Attempts are made to assess the income of the FPC member from different sources and resources in Midnapore District of West Bengal, selecting sample FPCs all over the district. How far such income is encouraging to keep them involved in the programme and the ways and means of enhance income have also been indicated and suggested.

0203-042. Sarma Arunima, Bhattacharyyya KG (Gauhati Univ, Dept Chem, Guwahati 781014). Neem leaves as a possible adsorbent for pollutant in aqueous medium –
a case study with methylene blue. Indian J Environ Prot, 21(10) (2001), 899-902 [9 Ref].

Neem (Azadirachtin indica) tree has occupied a unique position in the present day science because of its widely acclaimed medicinal and insecticidal value. In the present work, grounded neem leaves have been used as an adsorbent in aqueous medium to remove colour due to methylene blue as a model process for treating colour effluents.


Case studies from India indicate that village resource development activities may provide an important incentive for sustaining interest in the Joint Forest Management Programme apart from leading to improvements in people’s livelihood status. Ensuring sustainability of such activities, however, requires several innovative measures including the development of village funds and enhancing of inter-sectoral linkages.


In small scale industries in India, workplaces are usually small open spaces of small rooms where women work in significant numbers and the paper assesses the environmental conditions in which they are working.


All the spatial component of land mass viz. arable land, non-arable land and drainage lines are being developed as one organic unit under the project “National Watershed Development Project for Rainfed Areas” which is mainly based on people’s indigenous knowledge. Recognising that it is not possible to motivate most of the rural people without economic incentive, the technology comprises of both, the conservation systems and production systems.

Attempt has been made to analyse systematically existing status of accidents in sandstone quarries. Paper highlights the problematic areas and identifies the causes of accidents, unsafe practices by workmen and unsafe working conditions in quarrying areas. Some suggestions have been made to reduce accidents and their severity.


Paper discusses about emerging problems and poses some fundamental questions about the relevance of developing a community participation strategy at all. Some broad contextual questions are considered prior to developing the strategy itself.


Oil extracted from blubber of the Ganges river dolphin, Platanista gangetica, is used as a fish attractant in India and Bangladesh. This oil fishery is associated with the mortality of hundreds of dolphins every year. Oil from fish scraps was field tested for 121 days during 1997-1999 in the Ganges at Patna and was a very effective alternative to dolphin oil as a fish attractant.


During a radiation emergency subsequent to a nuclear accident or weapon fallout, quick assessment of the ground contamination and the resulting exposure is of prime importance in planning and execution of effective counter measures. The methodology includes generation of theoretically simulated gamma spectra at a required detector position for a given source distribution on the ground using Monte-Carlo method provided by general purpose couples neutron/photon transport code (MCNP CCC-200).


There is a global concern that uncontrolled release of GMOs may bring adverse effects on environment, and health of humans and animals. There is a strong support among nations that internationally binding biosafety regulations are needed for orderly application of biotechnology that ensures safety to health and environment. The national and international initiative towards this goal have been outlined, discussed and the need for capacity strengthening of developing countries, in this area, are emphasized.

Attempt has been made to develop an approach for the evaluation of environmental data through index analysis. Based on the sensitivity function evaluation and derivation of Impact Index and Quality Index related to individual parameters of the various components, Integrated Quality Index (IQI) has been derived.


Biodegradation of p-nitrophenol (PNP) was studied in upflow anaerobic fixed film fixed bed reactor. The studies showed that PNP was not degraded as a sole carbon source in the reactor. Addition of glucose as co-substrate increased the degradation of PNP. A ratio of >1 in terms of glucose to PNP could achieve 90% PNP degradation.


The case study here reveals that profitability of bamboo is very high and crop is financially feasible even at very high discount rates. This is especially true for Kartus variety and some progressive farmers have already adopted it in Gujarat. In addition to profitability factor, other socio-economic factors are believed to be favourable to the domestication of bamboo as an agroforestry crop in the region.


To improve the poor agricultural growth as well as living conditions of the people in drought-prone arid parts of Rajasthan State in India, the Indira Gandhi Nahar Pariyojana (IGNP) project was envisaged. Massive afforestation has been taken up to combat desertification in the area using water from the canal. Thus increase in bio-diversity has been observed while at the same time loss of bio-diversity may also be seen as far as indigenous flora and fauna is concerned.


Article illustrates the quality of acidic and non acidic mine water and leachate characteristic of opencast coal mining over burden dumps. Pollutants such as TSS,
TDS, oil and grease and heavy metal are found in the coal mining waste effluents. Management of these liquid waste at the primary level and secondary level have also been suggested to control the pollution level at the source.


More than 90.00 per cent of the unaffected, moderately affected and severely affected respondents had medium to high level of awareness towards the effect of tannery effluent pollution. There were non-significant differences among the moderately and severely affected respondents regarding the adaptability in a polluted environment. An action model was suggested based on the implications drawn out of the results.


The Vellore district with its, more than 700 tanneries accounts for more than 40% of the countries foreign exchange through the export of tanned products. But chromium containing tannery effluents contaminate the agricultural lands and irrigation water causes acute pollution which threatens the agricultural production. Paper studies the interest of affected farmers, tanners, agricultural and tannery labours who have given the conflict of interests among these clientele groups. The study also has come out with some recommendation to the concerned authorities viz., GOI and TNPCB to take immediate and necessary action to overcome the problem in the study area.


In the Andamans elephants are being used for timber extraction work since the end of the 19th Century. All elephants, departmental or private owned are named. Proper files giving details about their birth, work health, medical history are maintained. Young elephants are also taken proper care. This management has been quite efficient.


The local requirement of forest produce in Vyara forest division area of Gujarat has been estimated on the basis of primary data collected through sample survey and secondary information available from existing reliable database. It has been found that the area is self sufficient, so far as local demands of timber is concerned. However large demand supply gap exists in case of firewood even in the well-wooded localities.

There have been some attempts at conserving biological diversity prior to the UN Convention on Biological Diversity especially in countries such as the United States, although there have been none on the scale attempted by the Rio Summit. The effectiveness of such global policy needs to be examined and is attempted by looking at the implementation of the Convention at the national level, and noting differences in approach and policy.

**Cross References**

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