

Integrated Research and Action for Development

Annual Report
2008-09
IRADe



INTEGRATED RESEARCH AND ACTION FOR DEVELOPMENT

BACKGROUND AND FOUNDING OF THE SOCIETY

A comprehensive approach to development inherently involves the participation not only of the government, but also of NGOs, industry, corporations and financial and technical institutions at all stages of the research process. An inclusive research process creates wider consensus and makes policy reforms more acceptable.

With these ideas Integrated Research and Action for Development (IRADe¹) is set up as a fully autonomous advanced research institute, which aims to do research and policy analysis, train people and be a hub of a network among various stakeholders. IRADe is an institute that focuses on research and effective action through:

- Multi-disciplinary and multi-stakeholder research for implementable solutions
- Policy research that accounts for the political economy of the society and effectiveness of governance
It is a 'think tank' that works with 'action tanks'.

OBJECTIVES

- To develop understanding that integrates multi-stakeholder perspectives concerning issues of development.
- To promote a wider consensus through research and analysis on effective policies among stakeholders and policy makers.
- To build capacities among professionals for multi-disciplinary, multistakeholder policy analysis.
- To promote ideas and initiatives for inclusive developments at the local and global levels.
- To promote research supports to developing countries for development and also to negotiate international agreements better.

THE KEY THEMATIC AREAS ARE:

- Environment and Natural Resources
- Climate Change

- Energy and Power System
- Urban and Rural Development

Our activities in the above areas have cross-cutting themes such as poverty alleviation, gender equity, technology assessment and policy reforms. The key activities are:

- Research in Policy Analysis
- Action Projects with communities
- Training and Capacity Building
- Knowledge Dissemination and advocacy

PARTNERSHIPS DEVELOPED

IRADe has completed seven years of successful work since its establishment. In the seven year period, IRADe has gained considerable strength and carried out wide ranging activities in its thematic areas. IRADe also works as an independent evaluator to assess the effectiveness of different programmes and policies sponsored by government and quasi-government organizations. Over these years IRADe has succeeded in engaging not only academic experts but also NGOs, government ministries and the public and private sectors. These have included Planning Commission, Ministry of New and Renewable Energy, Ministry of Environment and Forests, Ministry of Power, Ministry of External Affairs, Department of Science and Technology, Central Statistical Organization under Ministry of Statistics and Programme Implementation, Ministry of Chemicals and Fertilizers, SEWA, etc for many national level projects. At the international level, IRADe has worked with Stanford University, USA; Wuppertal Institute for Climate, Environment and Energy, Germany; UNDP-GEF-SGP; ENERGIA-International network for gender and sustainable energy, Netherlands; British High Commission; WISION-Germany etc. IRADe has collaborated with private sector and multinationals organizations such as Petroleum Federation of India, Pricewaterhouse Coopers, ICF International and others.

IRADe was registered as Society on 5th September 2002 under Registration of Societies Act – Act XXI of 1860 with Registration No. S 43706.

ANNUAL REPORT

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INTEGRATED RESEARCH AND ACTION FOR DEVELOPMENT (IRADe)

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FOREWORD

IRADe achieved growth in several directions this year. IRADe is designated as a Centre of Excellence for “Urban Development and Climate Adaptation” by the Ministry of Urban Development, New Delhi. As one of its activities, IRADe will develop rapid assessment methodology for climate vulnerability of Indian cities and carry out a case study. This year the work on climate change has intensified and extends to urban development, gender and energy efficient technologies. Both urban development and climate change issues are assuming importance and also overlapping with each other. Urban growth, land use planning and infrastructure development have to accommodate urban development as well as climate change. Waste management, land fills and climate change are other issues that we addressed this year.

We also continued with our other long term projects viz. climate modeling, Marine National Park and Himalayan ecosystem in Uttrakhand.

The highlight of this year was Energy and Climate Summit – 2009. The event attracted senior ministers, secretaries, experts, CEOs, ambassadors, and others. Mr Sushil Kumar Shinde, Union Minister of Power, Mr. Montek Singh Ahluwalia, Deputy Chairman, Planning Commission and Shri Vilas Muttermwar addressed this summit.

The reach of IRADe within India extended further with work done in many states as shown in the map of India in this report.

We thank our readers, sponsors, collaborators and well-wishers who made it possible to proceed on this journey.

Jyoti Parikh
Executive Director

1. Climate Change and Environment

1.1 Centre of Excellence

IRADe is designated as a “Centre of Excellence in the area of Urban Development on Climate Change Vulnerability and Adaptation” by the Ministry of Urban Development, Government of India.

The objective of the work programmes would be to prepare a framework for urban response to climate change to address issues concerning vulnerability and adaptation.

Specific objectives are:

- a) Identify implications of climate change for Indian Cities including vulnerability assessment and adaptation challenges;
- b) Analyze urban development trends;
- c) Prepare a framework for adaptation strategy
- d) Take up several urban case studies.
- e) Exchange information and collaborate with national and international parties.

IRADe has set up a Centre for Global Initiative on Climate Change, and has completed or is executing projects in the areas of Urban Environment Development and Climate Change.

1.2 Climate change impacts and vulnerability of Himalayan ecosystems and livelihoods

Ministry of Environment and Forests, Government of India sponsored this study to assess climate change impacts, and vulnerability and adaptation to climate change of the Himalayan ecosystem with a specific study in the Uttarakhand State with the following objectives:

- a) To identify implications of climate change for the mountain ecosystem including vulnerability assessments of regions and vulnerable sectors like forestry, water resources and agriculture and their impact on livelihood.
- b) To map vulnerabilities and identify corresponding adaptation options.
- c) To study the effects of climate change on seasonal variability and reliability, and on climate extremes (e.g. droughts, cyclones, avalanches) affecting agricultural production, forestry and water resources.
- d) To improve understanding of barriers to adaptation and opportunities to adapt to climate change in terms of policy and action of the community level for different vulnerable sectors.
- e) To analyze socioeconomic data and their trends to develop socio-economic scenarios of the region to assist in assessing risk and to identify adaptation strategies for water resources, agriculture and forestry sector.
- f) To interact with policy makers, administration, local communities and academic centers regarding the broad aspects of adaptation options and livelihood.

A variety of data and methodologies are used in the study, which include vulnerability assessment by observing indicators; sustainable livelihood approaches, IPCC projections (4th Assessment Report); Participatory Rapid Appraisal (PRA) approach, public consultation with multi-stakeholders, etc. Field visits were also made and relevant

information and data have been collected. The report is under preparation.

1.3 Analysis of alternative course for India: for climate negotiations

The Ministry of External Affairs funded this project, which aims to bring together data and ideas that may help negotiators to see implications of options. The following conclusions emerged:

- As economic growth has to be maintained, reducing CO₂/GDP becomes necessary. However inter country analysis has shown that this can be only done up to a point and depends on many factors including the share of coal in total energy, geographical area of the country, population density share of heavy industries in GDP and so on.
- Sectoral approaches may be worth considering where different production sectors reduce their emissions; e.g. steel, cement, power and energy, transportation etc. However, we note that India's per capita production is small and so are the shares in global production, even though sometimes, India's rank may be in top 5 producers in the world.
- Climate negotiations are mainly mitigation oriented; the issue of adaptation has to take center stage urgently. An adaptation framework is suggested consisting of international assistance for infrastructure, capacity building, insurance and government safety nets. Adaptation funds should be collected on the basis of polluters-pay principle and not in the name of aid or largesse.
- Analysis of the IPCC global scenarios till 2100 show that Asia's emission rise till 2040, Latin America and Africa may

dominate after 2040 and more is needed from constituents of former Soviet Union.

Even for a scenario where green house gas concentration is stabilized at 520 ppm (stabilization at 450 ppm is required to limit warming to 2° C), the per capita emissions do not cross 4 tons in South Asia ever, which is the current global average. China is shown to peak their emissions during 2020-30 and OECD during 2010-20.

1.4 Low carbon technologies (LCT): implementation and policy issues

IRADe carried out this study in partnership with ICF International and Centre for Clean Air Policy (CCAP) with objectives to analyze low carbon technologies in power, cement, steel, and transportation sectors and to identify a range of potential mitigation options.

Analysis for cement and steel sectors identified a range of potential mitigation options. A comprehensive roadmap for implementing each policy option was provided including the identification of the key factors that would be involved, the key barriers to policy implementation, and major associated co-benefits. International policies that supplement the suggested domestic policy options have also been described, along with the implications for the structure of international climate policies.

The Steel Sector:

Globally, steel sector accounts for approximately 5% of total world green house gases (GHGs) emissions. India is the fifth largest producer of steel accounting for 4% of global production. The average carbon emission from Indian integrated steel plants is 2.7t CO₂ per tonne of crude steel produced. There is scope of mitigation

of carbon emissions with low carbon technologies. IRADe identified the following technical options:

- Enhanced energy efficiency in existing production units,
- Increased use of instrumentation, automation, IT, and raw material quality control,
- Adoption of green technology for new units,
- Setting up captive thermal power plants, and effective utilization of waste heat boilers,
- Long term technology shift,
- Establishing mechanisms through energy conservation act for maintenance of infrastructure and equipments.

The cross cutting issues that require institutional sustenance are:

- Development of adequate financing mechanisms
- Provision of direct government subsidies for rural sector
- Access to international financial mechanism.
- Availing of Clean Development Mechanism
- Setting benchmark for energy efficiency
- Technology transfer
- Collaboration with equipment manufacturer and consultancy houses

The Cement Sector:

The cement industry is the third largest consumer of coal in India. It consumes 22 million tonnes coal/annum and 14 billion units power/annum. The conglomerates in the cement industry have enhanced energy

efficiency effectively. Hence Green House Gases (GHG) emissions per tonne of cement have declined out follow a downward trend. Some of the measures undertaken are:

- a. Production of blended cement with higher ratio of additives/cement;
- b. Switch to less carbon intensive fuel in kiln;
- c. Waste heat utilization for power generation/co-generation;
- d. Implementing energy efficiency improvement measures and energy management.
- e. Further mitigation potentials can be achieved with:
 - Research and development (R&D).
 - Categorization of blended cements
 - Modified control of construction codes of central/state governments to allow use of Pozzolanic Portland Cement and slag.

The constraints against adopting for low carbon technologies are:

- a. High initial investment
- b. Infrastructural and logistics constraints
- c. Conflict of interest between regulatory and implementing agencies
- d. Lack of trained professionals to sustain projected growth in the sectors
- e. Lack of awareness among consumers about the life cycle costs and benefits of product and infrastructure

1.5 Carbon Capture and Storage

IRADe carried out this study in partnership with the British High Commission in India and Government of UK with an aim to identify and interact with the key stakeholders (for example Central

Ministries, legislators, academics, scientific community, public and private industry and state governments) to understand their appreciation of and apprehension about Carbon Capture and Storage (CCS) schemes.

The CCS technology has been recognized as one of the possible scientific & technological methods to address climate change mitigation. The scope of CCS is, to capture CO₂ emissions from a stationary industrial source (primarily a power station), and transport it to a geological site, where the captured CO₂ can be safely stored, under the earth surface without release in the atmosphere.

Deep cuts in global emissions are required to keep carbon dioxide concentration levels below 500 ppm. The mitigation options are enhanced energy efficiency and increased use of renewable energy. The IPCC in their fourth assessment report have indicated CCS technology as an important option to restrict carbon concentration in the atmosphere, and also to mitigate impact of climate change. The developed countries plan to test twelve-demonstration projects by the year 2012. Global CCS institute, Australia, has projected commercialization of CCS by year 2020. There are business opportunities in the field of CCS for the manufacturing and service sectors in India.

IRADe first conducted a review of technological status of CCS globally. A survey on CCS technology was conducted to evaluate the perception of the stakeholders who were divided into five categories based on their area of work and employment in India. The viewpoint and suggestions were gathered through structured interviews, questionnaires etc.

Using these results, a roadmap of CCS technology was then generated.

The outcome of the project is that India has to continue with the basic research on CCS with a larger range of technology options and progress to applied research in selected fields. Indian entrepreneurs should be able to gain business opportunities at a later date when the commercialization of CCS technology becomes viable.

1.6 Analysis of Carbon Capture and Storage (CCS) technology in the context of the power sector in India

The Department of Science and Technology, Government of India has sponsored this study. Through this study IRADe aims to answer, “What should be the level of participation of India, if any, in the global development of the Carbon Capture and Storage (CCS) technology?”

This study covers projection of emissions of CO₂ from power plants in future, literature survey to identify developments in carbon capture technology, evaluation of each technology for its economical and technical viability, specification of sequestration sites, and identification of the way forward for development, evaluation of monitoring options of CCS clarifying regulatory issues and to engage in debates with policy makers.

The ideas, information and concepts gained during the process of analysis, survey, and study will be compiled to document the development of carbon capture and storage technology and setting up priorities of basic and applied research for technology development.

1.7 Activity analysis model on climate policies for India

Ministry of Environment and Forests (MoEF) funded this project through which IRADe has developed a model. It generated a base run and three scenarios using it.

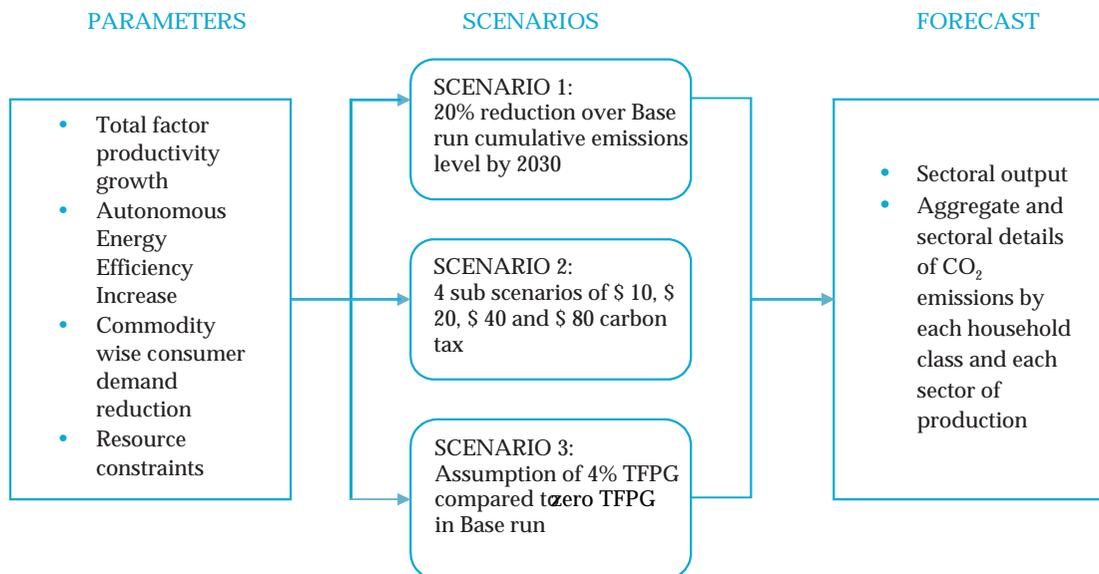
IRADe formulated an activity analysis model for climate change that links economy, energy and environment. The model uses Social Accounting Matrix of 2003-04 to account for the inter-sectoral relationships between different sectors of economy in general and with the energy sector in particular. Various new parameters have been introduced into the model to make the model more suitable for policy analysis. Sector wise total factor productivity growth (TFPG) and Autonomous Energy Efficiency Improvement (AEEI) parameters have been introduced.

Commodity wise Consumer Demand Reduction (CDR) parameters are also introduced to reflect reduction in per unit demand of a commodity by household due to energy efficiency. To make the model solution more practical, constraints on the domestic availability of natural resources

like coal, crude petroleum and natural gas have been included as also on the growth of power generation capacities of renewable technologies like hydro, natural gas, nuclear and wood. Apart from this new renewable based technologies like solar, wind, nuclear, bio fuels and newer, costlier but lower carbon-emitting coal based technologies have also been added besides the traditional power generation techniques based on coal, hydro and natural gas.

The model forecasts sectoral outputs in value terms as well as quantity terms. Demands for outputs are being projected for energy sectors like coal & lignite, crude petroleum, petroleum products, fertilizer, cement industry, steel and power. Sectoral investments are also projected for the economy in general and energy sector in particular. Model provides aggregate as well as sectoral details, to the extent of CO₂ emissions by five expenditure classes of rural and urban households and each sector of production.

The scenarios generated up to 2030 are 1) 20% reduction over Base run cumulative emissions level by 2030, 2) 4 sub scenarios of \$ 10, \$ 20, \$ 40 and \$ 80 carbon tax and 3)



Assumption of 4% total factor productivity growth (TFPG) compared to zero TFPG in Base run. The analysis of the above scenarios has provided us with an understanding of the economy-environment-energy linkages. It highlights the impacts that different emission reduction strategies might have in terms of actual emission reduction GDP loss and welfare loss of different classes of consumers.

A summary of the results of our analysis is provided below:

- Energy resource constraints are critical and must be factored in a long-term model.
- Energy mix impacts growth and consumption. Feedbacks to economy are important in deciding energy strategy.
- Energy efficiency improvements are not costless. Even a payback period of 4 years will require US \$ 545 billion additional investment by 2030 to attain 50% Improvement in Energy Efficiency (EEI)
- Carbon tax, even when not redistributed, has little impact on emissions. \$80 tax leads to only 0.4% lower emissions and 3% lower per capita consumption in 2030. Significantly however, the tax increases poverty.
- 20% Emission cut over the base run reduces per capita consumption by 27.2 % by 2030 and increases poverty even more than tax. The cumulative emissions reduce by only 15.5 %.
- Emission reduction is realized through reduction in coal power and increase in power from renewable sources.
- Autonomous EEI decreases emissions and increases GDP whereas TFPG

increases both GDP and emissions due to macro-economic feedbacks.

1.8 Ecosystem management of Marine National Park (MNP) in harmony with industrial development, Jamnagar, Gujarat



Mangroves at Narora Island, Jamnagar

IRADe is presently carrying out this project on Ecosystem Management of Marine National Park, Jamnagar, which is funded by the Ministry of Environment and Forests, Government of India. The project aims to study the overall potential threats and formulate an action plan to protect the valuable mangroves and corals, which are so unique to the Gulf of Kachchh. The Jamnagar region is going through unprecedented industrialization. As a result the entire coastline is threatened today by a combination of mangrove destruction, oil spills, toxic waste and



Mangrove regeneration

reclamation. The study aims to identify management, conservation and rehabilitation options to terrestrial and marine ecosystems that are consistent with stakeholders' plans and to suggest an implementation plan through a blend of economic instruments and command and control measures.

Representatives from IRADe visited the Marine National Park, Jamnagar and a reconnaissance survey was done. A meeting was held with the government officials from Forest Department, District Collectorate, Planning Department and Jamnagar Municipal Corporation. The discussion was mainly directed to aspect of different components of conservation of the Marine National Park, which concerned different government departments and agencies. Inclusion of industrial sectors in conservation efforts was also explored.

An inception workshop "Stakeholders' Consultation on Industrial Development and Conservation of Marine National Park,

Jamnagar, Gujarat" was organized on 3rd March 2009 at Gandhinagar. The workshop is described in detail in section 5.3.

Assessment papers are being prepared for

- (a) Various potential impacts from different sources in the park areas on marine ecosystem, specifically on the ecological wealth,
- (b) Some critical pollution sources such as industries and
- (c) Ports and shipping activities on the MNP. Simultaneously, the prospect of developing an eco-tourism corridor in the Marine National park and Khijadia Bird Sanctuary is being investigated.

A Steering Committee is formed for better coordination of management efforts and to identify strengths in each department and consolidate their actions to conserve the Marine National Park. The Committee consists of eminent people from government, research bodies, NGOs, environmentalists, etc. who are involved in the conservation of marine ecosystem.

2. Research Projects for Policy Analysis

2.1 Demand, supply and subsidy analysis for Indian fertilizer sector

Department of Chemicals and Fertilizers funded this project. IRADe carried out this study with following objectives:

- To analyze the fertilizer demand;
- To assess the impact of various feedstock prices;
- To estimate the total subsidy for the fertilizer sector;
- To suggest range of policy alternatives;
- To recommend viable policy and reform options for policy-makers;
- To carry out a comparative study of domestic policy and global fertilizer policies.

The study analyzed demand projection using statistical models for separate demand projections of Nitrogenous(N), Phosphoric(P) and Potassic(K) fertilizers using four separate demand projection of N, P, K, and N+P+K, each nutrient was taken as dependent variable. Fertilizer demand depends on the followings: (1) Real price of nutrient (2) Rainfall index (3) Ratio of gross irrigated area to gross cropped area and (4) Ratio of Area under high-yielding variety seeds to gross cropped area.

The analysis indicated the following (1) Fertilizers demand is sensitive to “real price”, inflation adjusted, of nutrients, level of irrigation, area under high yield variety seeds and rainfall index. (2) Natural gas (NG) is the most efficient feed stock and fuel choice for urea manufacturing. (3) The demand for NG is likely to increase from 7.78 BCM to 21 BCM, when conversion of

naphtha and other feed stock based urea manufacturing is retrofitted to use natural gas feedstock. (4) Reduction in the availability of cheap NG supplies under the administered price mechanism (APM) will result in a steep rise in the subsidy burden. (5) In business as usual (BAU) scenario subsidy projection is more for P followed by N and then K. (6) By 2026, P will account for 57% of subsidy burden. (7) A balanced fertilizer mix of 4:2:1 requires relative price ratios of N:K and P:K of 1.81 and 2.32 respectively. (8) Effective use of fertilizer can be promoted by drip irrigation / improved water management and better agricultural techniques.

The recommendations from the study are:

- Reduce the subsidy, by periodic escalation of fertilizer prices starting with arresting the decline in real price of P.
- Increase the domestic fertilizer production capacity with revival of closed urea and phosphate units. Capacity utilization of Single Super Phosphate (SSP) plants can be increased with adequate support.
- The potential of synergy with power sector in the light of development of IGCC technology and urea manufacturing should be exploited.
- Restructuring of the fertilizer sector is desirable. Coastal location for phosphate plant, potash, and complex fertilizers may be considered. The recent natural gas discoveries are also at offshore region. So urea plants can be also coastal
- Stimulation of private investments is desirable

- CDM opportunities for carbon credits can be tapped with innovative development.
- Fertilizer demand should be encouraged in states like Orissa, Jharkhand and Assam.

The fertilizer sector efficiency at the consumer side can be increased by use of IT and communication system. Soil analysis based fertilization can be best coordinated with the use of IT. Incorporating use of organic fertilizer with chemical fertilizers in the context of integrated nutrient management fertilization will ensure effective utilization of chemical fertilizer also.

2.2 Pre-feasibility study of integrated waste management, landfill gas recovery and utilization at puducherry, India

This project was funded by the Environment Protection Agency of the USA (USEPA). Puducherry has been witnessing rapid increase in population and urbanization and the consequent increase in the volume of municipal solid waste, making it difficult to manage it with the existing infrastructure facilities. It is estimated that on an average there is generation of 400 gms of waste (garbage) per person per day. The changing lifestyles and consumption patterns with 'use and throw' products result in increase in the per capita generation of waste. Increasing income levels and consumerism has lead to generation of more wastes. The quantum of waste produced increases at a rate of 2.5% per year. Puducherry Union Territory generates about 335 tons of municipal solid waste each day.

Problem with solid waste management at Puducherry

At present, there are two common solid waste dumping sites for the Puducherry and Oulgaret Municipalities. All the municipal authorities deposit solid waste at dump-yards situated within or outside the city without covering the waste with inert material. There is no treatment of solid waste at these common dumping sites, nor practice of sorting the waste at source.

The review of relevant documents and visits to the site has been made. A preliminary report is completed.

2.3 Techno-economic and socio-agronomic analysis of biodiesel system

The Ministry of New and Renewable Energy (MNRE) funded this project and the study aims to analyze various socio-economic parameters from the perspective of various stakeholders and end users with regard to Jatropha based bio-diesel cultivation and production. It addresses demand and supply gap and analyzes socio-economic feasibility of a multi-stakeholders system with focus on rural population.

The main objective of the project is to analyze and examine the feasibility ranges for various parameters to determine techno-economic, agronomic and social and economic viability from the perspectives of various stakeholders; to identify gaps that need to be filled in interlinking of various components of the biodiesel system; and to define a road map for each component of the bio-diesel system for National Policy on Biodiesel.

As a part of this study, we collected and analyzed data on various parameters of seed cultivation, biodiesel production and consumption, and identified the primary barriers to Jatropha plantation and biodiesel production in the state of Rajasthan and Orissa.

The study provides a detailed framework about investment opportunities for technology development and generates useful information through field studies with an aim to provide policy indicators for the selection of appropriate sites, analysis of plantation and seed collection, techno-

economic assessment of extraction and processing and enhancement in earning capacity of rural poor.

It was observed that a target-oriented approach was followed during the implementation, the systems were installed with good spirit and intention but MNRE guidelines were not properly followed by the implementation agencies. This had led to absence of awareness and clarity among the beneficiaries, suppliers, annual maintenance contract (AMC) agents and nodal agency officers regarding the exact responsibility and right of each party.

3. Evaluation and Action Projects

In our last annual reports we reported on evaluation of Remote Village Electrification (RVE)/ with off grid solar application, especially solar home systems as well as franchisee system for grid connected villages as a model for Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY). This activity continues in other areas.

IRADe has undertaken the evaluation of Solar Photo-voltaic Demonstration Programme and Solar Thermal Demonstration Programme during the 10th Plan period under Ministry of New and Renewable Energy. The evaluation, funded by MNRE, was carried out with the following objectives:

- Study the usefulness and impact of the scheme/programme.
- Study the role and effectiveness of the existing delivery mechanism.
- Measure effectiveness of the present coverage, beneficiary definition, eligibility condition and criterion.
- Identify the need of major change, if considered necessary.



Dish type solar cooker Haridwar, Uttarakhand

For both the evaluations starting point was discussion with officials of the nodal agencies of the states with the help of a



Box type solar cooker installed at Ahemdabad, Gujarat

designed questionnaire. A brief survey of the state nodal agencies responsible for implementing the program as well as with beneficiaries to get first hand information about different aspects of scheme indicated in the objective. A systematic approach for the assessment of the scheme was undertaken.

3.1 Evaluation of solar photovoltaic demonstration programme:

It was carried out in six states namely Rajasthan, Gujarat, Karnataka, Manipur Uttarakhand and Haryana to evaluate solar photovoltaic water pumping program, solar lanterns, street lighting systems (SLS) and domestic lighting systems (DLS). It was found that more than 93 % of DLS, 69 % of SLS, 72% solar lanterns and 100 % of solar pumps were found working.

The life style of the beneficiaries has changed gradually after they have started using DLS systems. The beneficiaries' working hours have increased, their children can study during night time, less kerosene is consumed increasing savings, a healthier lifestyle with reduced risk of snake/insect bite, fire in homes, theft, etc is reported. By using these systems the

beneficiaries have started using various modes of communication, education and entertainment. The beneficiaries have started using mobile phones, radios, television etc.

3.2 Evaluation of solar thermal demonstration programme:

It was carried out in four states viz.



SPV home light system at Ajmer, Rajasthan



SPV street light system Panchkula, Chandigarh

Rajasthan, Haryana, Uttarakhand and Gujarat.

The information regarding use of solar cookers in surveyed villages is given in the following table:

It was found that more than 85% of the beneficiaries use cookers regularly.

State	Sample no's	Total in use	Daily use	Used once a week	Used once a month
Rajasthan	15	11	8	1	2
Haryana	15	11	8	1	2
Uttarkhand	23	19	12	7	-
Gujarat	200	175	111	37	37
TOTAL	253	216	139	46	41

Various types of solar cookers have proved their utility for variety of applications ranging from domestic cooking for few people to institutional sector meeting cooking energy demand of thousands of people. Most of the users surveyed were satisfied with the performance of the cookers and more than 85% of the beneficiaries use it regularly (64% on almost daily basis, 23% on weekly basis and 19% on monthly basis).

The people are aware that the cookers cannot be used on daily basis, as it is seasonal. Some users informed that they would like to use it as much as possible but there are limitations like when both family members are working or the food has to be cooked early in the day.

Overall the users felt satisfied with the performance. Almost 90% of the users felt that the solar cooked food is tastier and helps in keeping good health. The solar cooker is a lifetime asset. Handled with care, it can last 15 years or more. There is no moving part in it to go wrong. The only maintenance required is an occasional coat of black paint on the inside of the cooker and on the outer surfaces of the cooking pots. It is a system equally valuable in both the rural and urban settings. Solar cooker provides meals at zero cost in terms of fuel and in terms of the environment.

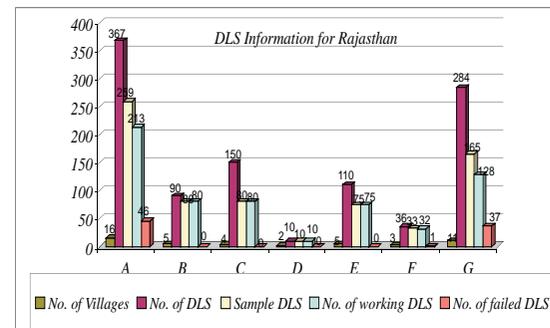
3.3 Evaluation survey of Remote Village Electrification programme (RVE) in Haryana and Rajasthan

IRADe was awarded the evaluation of the Remote Village Electrification (RVE) Programme in Rajasthan and Haryana State by Ministry of New and Renewable Energy, Government of India to study the success rate of the programme. The study was concerned with the evaluation of the performance of the solar photo-voltic (SPV), domestic lighting system (DLS) and street lighting system (SLS). We carried out evaluation with the objectives of assessing the impact of programme implementation, performance of the systems installed at the beneficiary level, effectiveness of the service and maintenance infrastructure and level of community participation in the processes. The evaluation was conducted through the combined approach of field verification and surveys of beneficiaries, village panchayats and officials at the nodal agency.

Field evaluation results of Rajasthan

46 villages are covered under the RVE Program in Rajasthan State. The Rajasthan Electronics & Instruments Limited (REIL) Tata-BP made SPV-DLS were installed which consists of a 37 watt solar module, charge controller, two CFL lamps with reflector of 9 watt each and a lead-acid tubular battery of 12v, 60ah capacity. Our survey teams evaluated the performance of 702 DLS samples as per the proposal, from a total of 1063 installed DLSs under the program. 37% of the evaluated systems were found not to be in working condition. The maintenance persons/technicians who attend the problem where contacted. It was observed that maintenance is a problem in Jaisalmer district due to beneficiaries' migration and also due to high wind velocity and uneven surface. Due to migration almost 90% systems have no

proper wiring and panel orientation. About 16% of the beneficiaries have removed the charge controller. The level of distilled water was also below the prescribed limit in 80% of the cases. No community participation and system maintenance was observed.



It was observed that a target-oriented approach was followed during the implementation, the systems were installed with good spirit and intention but MNRE guidelines were not properly followed by the implementing agency. This had led to absence of awareness and clarity between the beneficiaries, Suppliers, AMC agent and nodal agency officer regarding the exact responsibility and rights.

Field evaluation results of Haryana

Though most villages of the State of Haryana were electrified, but still there are few hamlets (dhanies) in the hilly Shivalik belt (Morni Hills) of Panchkula District, which are still un-electrified. The electrification with the conventional grid electricity is not economically feasible due to hilly terrain and scattered houses in each hamlet. IRADe has evaluated the SPV, DLS and SLS programme of Haryana.

Approximately 15% of the systems were found to be not working. Our survey team located and visited the remote DLS sites in 5 Gram Panchayats of Panchkula District Three systems each in Gram Panchayats

Bhoj Kudana and Bhoj Ponta were found to be not-working..

Observations

It was observed that a target-oriented approach was followed during the implementation, the systems were installed with good spirit and intention but MNRE guidelines were not properly followed by the implementing agency. The new systems were allotted again to the beneficiaries who already have the SPV-

DLS or SPV-SLS under previous schemes. Of the sampled systems 20% and 13% of the houses with DLS and SLS respectively were already allotted systems under other previous schemes as well, so they have more than one SPV system. The terms and condition of the comprehensive maintenance contract (CMC) were not clear to the project officers, agents, and villagers etc. The suppliers for SLS have not appointed their representative/agents for maintenances and the services were below the desired level.

4. Gender and Poverty Alleviation

4.1 UNDP gender and climate change workshop, Sri Lanka (workshop organization and facilitation)

IRADe facilitated the annual learning workshop of UNDP Asia-Pacific gender community of practice held on 24-26 September 2008, Negombo, Sri Lanka. IRADe provided the technical input to the workshop. Dr. Jyoti Parikh, Executive Director and Dr. Konsam Sangeeta, Development Consultant, IRADe facilitated the event.



Dr. Jyoti Parikh, Mr. Omar Noman (Chief of Policies and Programmes), Dr. Konsam Sangeeta at the UNDP Regional Centre in Colombo, Sri Lanka

The three-day interactive and participatory regional training workshop was to equip UNDP country office gender as well as environment focal points from Asia and the Pacific with knowledge and skills to address and facilitate gender integration in their offices' climate change work. The workshop focused on learning about the key dynamics that link gender and environment, particularly around issues of impact and adaptation, the need for a strategic shift in the mitigation agenda, and the policy responses these imply.

The main objective of the workshop was to develop participants' understanding of gender and climate change issues, as a capacity building measure through:

- Helping gender specialists understand how and why an understanding of climate change is essential in their work, and
- Enabling environment and climate change specialists to gain a better understanding of how gender is a vital dimension in their work.

Target Audience



Participants at the UNDP Gender and Climate Change workshop, Sri Lanka

Forty-five participants from the region's UNDP country offices who are working on gender equality issues and/or environment and climate change participated in the workshop. Participants were from Sri Lanka, Indonesia, Afghanistan, Fiji, Philippines, Papua New Guinea, Mongolia, Thailand, Myanmar, Bhutan, Cambodia, Malaysia, Timor Leste, India and Pakistan.

Important Outputs of the Workshop

- Issues and concepts relating to climate change and gender in the participants' region and work area were introduced,
- Regional priorities for addressing gender and climate change were identified, and
- Knowledge and skills to integrate

gender perspectives in UNDP’s climate change initiatives at the country level were strengthened.

4.2 Gender Audit of National Energy Policies

The initiatives taken up by IRADe-ENERGIA team to conduct a gender analysis of some of the renewable energy policies and programmes in India is completed. The analysis, findings and recommendation of the study are described in a report titled “Gender Analysis of Renewable Energy in India: Present Status, Issues, Approaches and New Initiatives”.

Findings and Key Recommendations

The budgetary outlay of MNRE under the 10th five-year plan was rated using a gender-rating procedure devised by IRADe to substantiate the effective benefit accruing to women from the various MNRE programmes. It is found that a mere 12.67% of the total ministry’s outlay addresses women’s specific energy needs. One of the reasons for this imbalance is intra-household inequities, with various surveys showing that women are not even equal beneficiaries of grid electricity as they do not read and have too many work pressures to enjoy the benefits of electricity such as entertainment through television.

The following are the key recommendations that emerged:

- (a) Reorient monitoring and evaluation mechanisms to reflect gender concerns in energy programmes
 - Improve the accountability of various ministries, in terms of their performance in including gender concerns in the energy sector, by incorporating monitoring and evaluation (M & E) with selected

gender indicators as a regular part of the implementation process.

- Gender budgeting within each ministry should reflect women’s priorities, and be employed to see how women are being helped with regard to their gender-strategic needs, including their involvement in energy infrastructure and management.
- (b) Linking women’s empowerment with energy development
 - The first important step would be to include women in the planning, execution and monitoring processes of programmes and schemes. The monitoring and evaluation of the programmes should differentiate the benefits accruing by gender: for example, the productive hours ‘lost’ by women in the collection of fuel wood should be counted, and whether the ownership of and control rights to energy resources are transferred to women examined. The priority should be to make cooking with cleaner energy a right for all households, and to couple this with creating economic space for women’s work and mobility.
- (c) Inter-ministerial coordination
 - Providing affordable and sufficient energy is the responsibility of several ministries including those of Power, Petroleum and Natural Gas, New and Renewable Energy, Rural Development, Environment and Forests, Agriculture and the Ministry of Women and Child Development.
 - This requires coordination and an inter-ministerial set-up, involving the various energy ministries and other ministries with stakes in women’s wellbeing and empowerment to help ensure that gender concerns are not overlooked. As an example, the

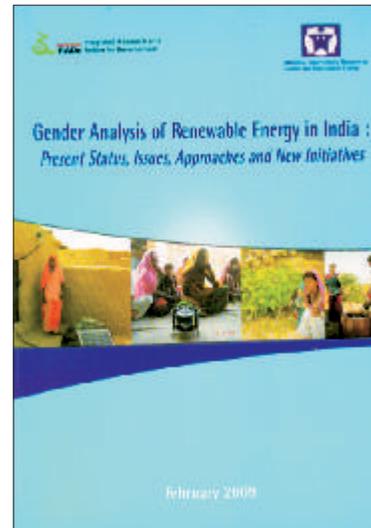
Gender Budgeting Cell (GBC) at MNRE could collaborate with GBCs in other ministries in integrating energy issues in their programmes and lead the process through to linking women's empowerment to gender budgets.

- (d) Make cooking fuel available within 1 km of rural habitants

The Integrated Energy Policy (IEP) suggests that fuel wood plantations should be available within one kilometer of all habitations where the inhabitants do not have access to, or cannot afford, even the subsidized cleaner fuels, and this is now included in the 11th five-year plan. Biomass fuels are likely to remain the primary fuels for process heat and cooking for some time because the commercial energy options are still inaccessible and too expensive for rural poor women who will continue to rely on gathering wood and other biomass residues.

Enabling access to cleaner and affordable cooking energy is an important energy goal if one is to reduce women's drudgery, the time they spend gathering fuel and the health impacts of indoor air pollution. This goal could be achieved through strategies, such as expanding the access to other fuels such as LPG, kerosene and biogas, in addition to wood from plantations within 1 km.

Achieving the suggested goal at the practical level will require coordination among various ministries and a mission-mode approach (with a specific target within a given time-frame). Different approaches from the various ministries will need to



Gender Audit Report

converge to achieve this goal, and these will depend on the state, the district, the ecosystem and the economic status of the local inhabitants.



From L to R : Dr. Sudhir Varma, Prof. Sudhakara Reddy, Dr. Ajit K. Gupta, Dr. Jyoti Parikh, Dr. Govind Kelkar

We are hopeful that the report would help in highlighting the gender concerns in the content of energy policy and programmes not only in India but also in other countries. To help in reaching out to wider energy, gender and development targets, a four-page flyer of the study including objectives, process methodology and findings along with recommendation is prepared as an advocacy and dissemination tool.

5. Events / Seminars / Workshops

5.1 Workshop on low carbon technologies: implementation and policy issues, 19th March 2009, New Delhi

IRADe organized the workshop on March 19th, 2009 at India International Center, New Delhi. This workshop was sponsored by Center for Clean Air Policy (CCAP), USA. This was an outcome of joint study project conducted by IRADe and ICF International, New Delhi. The key industrial sectors covered were electricity (demand and supply), transportation, cement, iron and steel.

Prof. Jyoti Parikh introduced and welcomed the eminent panelists Dr. K. Parikh, Member Planning Commission; Shri. Anwar-ul- Hoda, Member Planning Commission; Mr. R.S Sharma, CMD, NTPC, Dr. Pramod Deo, Chairman, CERC. She explained that sectoral analysis is acquiring a new dimension in international negotiations. Much of policy framework exists already. It is reviewed periodically based on new knowledge, technology developments in the context of national economic outlook and implications. The workshop discussed policy issues to motivate application of low carbon technologies (LCT) by Indian industry to mitigate greenhouse gas (GHG) emissions, without disturbing economic growth with emphasis on (1) Analysis of options for GHG emission mitigation (2) Existing policy implementation analysis. (3) Suggest policy up-gradation in the context of current scenario in these sectors.

Following views on the perspectives were expressed;

- India needs accelerated economic

growth for poverty alleviation, and sustains it continuously. The national policy makers must think and they should know their priority of action for climate change (CC). They discussed CC projections and presented Indian viewpoints in international climate change negotiations.

- In power sector the proven low carbon technology are being incorporated. There are R&D opportunities in integrated gasification combined cycle (IGCC) scheme, and these are being pursued by National Thermal Power Corporation Ltd (NTPC) and Bharat Heavy Electrical Ltd (BHEL). The barriers to LCT applications are high investment cost, and their suitability to Indian units.
- There is urgent need to promote efficient public transportation in the cities and metros. The R&D opportunities lie in reducing logistic cost. Transport sector is directly linked to heavy manufacturing industry, and is generating large employment opportunities. One of the options is electric vehicle. Viability of the new scheme can be ensured, by acceptance of users (market), and stakeholders' willingness to implement.
- The Bureau of Energy Efficiency (BEE) is pursuing National Action Plan on Climate Change (NAPCC) mission on enhanced energy efficiency (EEE). Their focus is on large designated consumers, who consume more than 30,000 metric ton oil equivalent per annum of energy. Implementation of EEE is small and medium enterprise is major challenge.
- The Central Electricity Regulatory

Commission (CERC) in striving for greater use of carbon neutral, renewable energy use for power generation.

- The low carbon technologies developments and implementation have cost component. There are financial constraints for development of nationally appropriate mitigation action plan. The technologies like IGCC, CCS and advanced technology for steel production should be adapted for India. India should analyze the specific needs of international assistance in technical and financial domain. The stakeholders should figure out what technological scheme has worked, what has been achieved and what needs to be done by when?
- A low carbon economy is inevitable for India.

5.2 Energy and Climate Summit, 2009



Inaugural session of summit: Shir Vilas Muttermwar, Dr. Jyoti Parikh, Shri Sushil Kumar Shinde, Sri Montek Singh Ahluwalia & Dr. Kirit Parikh

IRADe, organized “Energy and Climate Summit 2009” in February 3-4, 2009 at New Delhi. Honourable Union Minister of Power Shri Sushil Kumar Shinde, presided while Dr. Montek Singh Ahluwalia, Deputy Chairman, Planning Commission, inaugurated the event. The Summit was attended by many important heads of ministries, government bodies, industries,

private institutions, etc. who made the session discussion relevant.

Senior representatives of the ministries, private and public sector, academics and research institutes from India and abroad presented their insight on climate change and associated tasks ahead for mitigation and adaptation, and also discussed how climate change will impact the energy sector. There was a stakeholders’ debate on the reduction of GHG emissions by companies in the energy sector, a key issue in light of the fact that India is targeting a huge expansion in its energy infrastructure.

Apart from the inaugural session the summit was organized in six sessions (1) Climate change and the power sector (2) Sectoral analysis: GHG emission control (3) Climate change and the coal sector (4) Financing and strategic initiatives (5) Renewable energy and energy efficiency and (6) Climate change and the hydrocarbon sector

This was followed by a valedictory session.

Recommendations

- GHG mitigations should be included as a part of corporate social responsibility (CSR)
- Institutionalized approach to combat climate change is required at global level, so that it will facilitate exchange of information and appropriate authority will be aware of the development.
- There should be equity among developing and developed nations on climate change. The developed nations should promote technology, as they already have the infrastructure for technology development.
- CEO of PSUs must undertake

responsibility of mitigation of emissions from their units. This will form a part of the MOU they sign with the government. A similar scheme should be deployed for private units.

- Use of renewable energy (biomass) in thermal power plant (including super critical plants) should be encouraged, and gradually increase its share as well.
- Development of intelligent grid for connectivity of non-schedule generation capacity (such as solar and wind energy based power) is required.
- Incentives should be provided for ecologically desirable housing systems
- One presentation indicated that for climate adaptation the expected investment on low carbon technology based systems will amount to 7% of GDP.
- The research on 2nd generation algal-based bio-fuels should be augmented. The algal-based bio-fuel requires water (need not be pure water) and carbon dioxide and can be synergistic with power plants
- The use of bio-char obtained from slow pyrolysis of agricultural waste can be used for restoring carbon of the soil, and for carbon sequestration.



From left to right : Mr. Suresh Prabhu, Dr. Jyoti Parikh, Dr. Kirit Parikh, Dr. T. Ramasami, Sir Richard Stagg and Dr. U.D. Choubey

The valedictory session was chaired by Dr. Kirit Parikh, Member Planning

Commission who summarized the issues raised needing urgent considerations. He argued that LCTs are inevitable not only for India but also for the world. These were discussed by the eminent panelists HE Sir Richard Stagg, British High Commissioner, Mr. Suresh Prabhu, Former Minister for Power and Dr. T. Ramasami, Secretary DST

5.3 Workshop on Industrial Pollution and Conservation of MNP, 3rd March 2009, Gandhinagar, Gujarat

IRADe had organized an inception workshop “Stakeholders’ Consultation on Industrial Development and Conservation of Marine National Park, Jamnagar, Gujarat” on 3rd March 2009 at Gandhinagar. The purpose of this workshop was to mainly discuss the scope of partnerships from all concerned sectors in the preservation of Marine National Park. It was planned so as to share the studies and work that have come up on the subject and how to go ahead further in



From left to right: Dr. Jyoti Parikh, Dr. Kirit Parikh, Shri S K Nanda, Shri CL. Meena Chairman GPCB

minimizing impacts on the marine ecosystem. The workshop was inaugurated by Shri S K Nanda, Principal Secretary, Gujarat Department of Forests and Environment of the Government of Gujarat and attended by many other secretaries of various departments and industry representative, academics and NGOs.

In the sessions' discussions, some key issues of the MNP management were discussed at length. They are:

- Economic development and coastal ecosystem management: The MNP area has witnessed various diversification and expansion of economic activities along with rising population, increasing industries, ports and jetties. This stresses the potential of coastal areas to sustain social and economic development objectives. What is required is not protection of coastal areas but rather good management.
- Integrated Management Approach: An integrated approach is required to avoid compartmentalization in the management of MNP. There are more than eight government departments that have jurisdiction over the MNP which include Gujarat Maritime Board, Gujarat Pollution Control Board, Gujarat Forest Department, Coast Guard, Indian Navy, Gujarat Fisheries Board, Coastal Development Board and Gujarat Industrial Development Corporation, etc. There should be synergy among these departments with specific actions being identified.
- Integrate scientific efforts in the coastal ecosystem protection: Space Application Centre (SAC), Gujarat Ecological Education and Research (GEER) Foundation, Gujarat Ecology Commission (GEC), Gujarat Ecology Society (GES), etc. have been very active in the mapping and monitoring of coastal habitats, particularly in MNP area. The data and information generated would help in effective and sustainable management of coastal ecosystem by other concerned departments. The approach should be to convert the scientific facts into socially useful information.
- Integration of SME industries in the management of coastal ecosystem: SME is coming up as an important sector in Jamnagar. The State must ensure that environment impact assessment (EIA) is taken up in these sectors. The biggest challenge is how to make the small and medium enterprises and other unorganized sectors conform to the environment by adopting clean measures.
- Plan for Eco-tourism: Eco-tourism can create a set of stakeholders who would have interest in preserving the ecosystem. Thus, the possibilities of developing eco-tourism corridor by combining the MNP area with mangroves and Khejidia Bird Sanctuary (KBS) is there in eco-corridor for promoting sustainable tourism in the region can be established.

As mentioned in section 1.8, one of the most important outcomes of the workshop is the setting up of Steering Committee for better coordination of management efforts and to identify strengths in each department and consolidate their actions to conserve the Marine National Park. The Committee consists of eminent people from government, research bodies, NGOs, environmentalists, etc. who are involved in the conservation of marine ecosystem.

5.4 Workshop on Food Security: Present and Futures, 16th September 2008, New Delhi

IRADe celebrated its 6th foundation day with a panel discussion, organized on "Food Security: Present and Future" at India International Center on September 16th, 2008. Dr. Kirit Parikh chaired the panel, and Dr. Abhijit Sen, Member Planning Commission was the chief guest of the event. The eminent panelists were Dr.



S. Mahendra Dev, Dr. Ashok Gulati and Dr. Suman Bery.

Recommendations

- The domestic self-sufficiency ratio for food security, need to be optimized with increasing population and income.
- Climate change and food security are the issues that should not be dealt in isolation for a food secure world.
- The focus should be on yield growth in agriculture sector along with production growth.



Participants at the workshop

- The biggest weakness is that though there has been a significant increase in agricultural output, its value is still lower than the increase in subsidy provided by government to agriculture sector.
- The world as a whole is self-sufficient but the nation should have foreign

exchange reserve as a safeguard.

- The panelists expressed an urgent need for a national development strategy for handling the issue of excess labor in agriculture sector.
- India has to learn from the experience of China in management of small farms.
- Nutrient management of arable land in India is important. A decline in organic matter in the Indian soil is projected. The current content of organic matter is only 0.4 to 0.5% while in China it is around 1%.
- Some biofuels to resolve energy security will conflict with the food security as good yield of biofuels require water and fertilizer.
- Intensification of agriculture will require more ground water but the electricity subsidy has resulted in indiscriminate withdrawal of ground water and creating new problem of lowering of ground water table. An institutional approach for collective action to rationalize use of irrigation water is the need of the hour.

5.5 Clean Development Mechanism (CDM) training programme for Delhi state government agencies, 2008

IRADe organized Clean Development Mechanism (CDM) Training Workshop for Delhi Government Agencies at Delhi Sachivalaya on 16th April 2008. Government of Delhi sponsored the workshop.

The objective of the workshop was to provide training to Delhi Government Agencies on CDM so that they can get their projects registered for CDM easily, can get CDM benefits as well as can take country towards sustainable development. The workshop featured Mr. J. K. Dadoo, Secretary Environment and Mr. Rakesh Mehta, Chief Secretary, Delhi. Speakers

gave in-depth knowledge of CDM and climate change to the participants with relevant examples. The CDM training workshop covered the different aspects of CDM, which are basically needed to get any project registered for CDM. There were several presentations, which covered the CDM and climate change aspects in buildings, forests and cities etc, preparation of PDD and PCN, certified emission reduction (CER) calculation and programmatic CDM.

After completion of all the presentations ranked by participants CDM related questions which were answered to further

clarify issues. At the end of the workshop Mr. J.K. Dadoo Secretary (Env.)-Cum-Chairman (DPCC) expressed the vote of thanks to all the speakers who had given their valuable time and in-depth knowledge of CDM to participants and cleared all the confusions, which participants had for CDM.

The workshop was finished successfully with the joint efforts of IRADe and Government of Delhi. Participants found this workshop really useful for them and gave a very positive feedback.

6. Professional Activities of Members

Dr. Kirit Parikh, Chairman, IRADe and Member, Planning Commission, Govt. of India, New Delhi was involved in number of high level policy committees of the Government. He was also member of governing bodies of many academic institutions and chaired some of them.

Awards/Honours

He was awarded Padma Bushan by the President of India in March 2009.

Selected list of seminars, conferences, workshops and meetings attended

- Delivered keynote address at the workshop on “Underground Coal Gasification”, 18th June 2008, organized by CSTEP, Karnataka.
- Keynote speaker at the international conference on “Energy Efficiency and Climate Change”, organized by IIT Delhi Alumni on 4th April, 2008 at IIT Delhi.
- Lectured at Oxford University “Integrated Energy Policy for India: Key to Sustainability”, April 28th 2008, Oxford, United Kingdom.
- Delivered lecture on “India’s Approach to Climate Change” at the Indo-German Consultative Group (IGCG) meeting, September 12th 2008 at Munich, Germany.
- Address at National Defence College on “Energy Security: Strategic Options for India”, 10th November 2008 at New Delhi.
- Delivered key note address at the conference on “Energy and Economic Growth: The Emerging Prospects and Policies” organized by Department of Economics, Sri Sathya Sai University, 4th December 2008 at Anantapur, Andhra Pradesh.
- Made a presentation on “Policy initiatives: Changes and Challenges” as Chief Guest at the International Coal Conference 2008 on 12th December 2008, New Delhi.
- Delivered keynote address at the inaugural session of workshop on “New Techniques of Applied Economic Research”, 15th December 2008 organized by Institute of Economic Growth, New Delhi.
- Delivered Foundation Day lecture at the K.D. Malaviya Institute of Petroleum Exploration, ONGC, December 2008, Dehradun.
- Addressed the Alumni Association of VJTI on “Energy Challenges of India”, 21st December 2008, Mumbai.
- Led Indian delegation to Kazakhstan Relations. Gave a talk “Perspective on India’s energy needs opportunities for India-Kazakhstan Relations”, January 17th 2009, Kazakhstan.
- Delivered VKRV Rao Memorial Lecture on “Integrated Water Management” organized by ISEC, February 7th 2009, Bangalore
- Keynote address at the inaugural session of first national training workshop on “Mathematical Modeling” under India-IIASA programme, February 23rd 2009. Organized by NISTADS, New Delhi.
- Delivered Bureau of Energy Efficiency-BEE Foundation Day Lecture “Policy for Energy Efficiency”, March 4th 2009, New Delhi.

Dr. Jyoti Parikh, Executive Director IRADe Selected list of seminars, conferences, workshops and meetings attended

- Panel Chaired and Speaker Conference on Ethanol and Bioenergy, organized by the Renewable Fuels Association(RFA), 28th April, 2008, Bangkok, Thailand
- Speaker-“Mitigation and Adapting to Climate Change, Energy and Gender” (including power, energy efficiency transport and other sectors) 20th to 26th May 2008 at Planning for Mainstreaming Gender in Energy organized by ESMAP/World Bank, 20-26th May 2008 in Washington DC, USA.
- Speaker and participant in a seminar on India-Europe, organized by Action for a Global Climate Community, 7-29 May 2008 in Potsdam, Germany.
- Chaired the session “Energy Efficiency Improvements” at national seminar on “India’s Economic Growth and Environmental Sustenance”, organized by Petroleum Federation, 5th June 2008 at India Habitat Centre, New Delhi.
- Panel Speaker at the technical session at seminar on “Global Warming and Climate Change: Issue and Challenges for India”, organized by Department of Personnel and Training, Ministry of Public Grievances and Pensions, 26th July 2008 at Vigyan Bhawan, New Delhi.
- Speaker on workshop “National Assessments of Impacts of Climate Change on Himalayan Ecosystem and livelihoods”, organized by Ministry of Environment and Forest and National communication, 11th August 2008 at IIC, New Delhi.
- Speaker-Developing Country Perspectives on Climate Negotiations, 29-30 Aug, 2008 at Johannesburg, South Africa.
- Conducted a UNDP Asia-Pacific Gender Community of Practice Annual Learning Workshop on Climate and Gender, 24-26 September 2008 at Colombo, Sri Lanka.
- Panel Speaker on session “Sustaining the Commitment”, organized by World Energy Council, 22nd October 2008, New Delhi.
- Guest of Honour at the Conference on “Solar PV: Emerging Viable Option with Technology & Policy Thrusts” in support of Ministry of New and Renewable Energy, GOI organized by Search Foundation, 31st October 2008, New Delhi.
- Chairperson at session “Energy Policy, Sustainability & Environmental Change” at ESRC Workshop on “Environmental Sustainability & Climate Change”, organized by IEG and LSE, 17th November 2008, IIC, New Delhi.
- Chairperson at Plenary-1, Managing Carbon for Sustainability Integrating Technologies – Intl. Co-operation – CDM & RE Projects, 26th November 2008 at India Power Forum at Le Meridien Hotel, New Delhi.
- Panel Speaker on “Conservation Agriculture in the Eco- Regional Context”, 11th December 2008, organized by NCCA, 11th December 2008 at NASC Complex, New Delhi.
- Keynote address at the inaugural session “Future against Threat of Climate Change”, 19th December, 2008, organized by Delhi School of Economics, New Delhi.
- Panel speaker on International Colloquium on Women’s Empowerment, Leadership Development, International Peace and

Security on 6-8 March, 2009 at Monrovia, Liberia.

- Speaker in Seminar on Climate Change, organized by ICS A/S Copenhagen, 10-12 March, 2009 at Copenhagen, Denmark

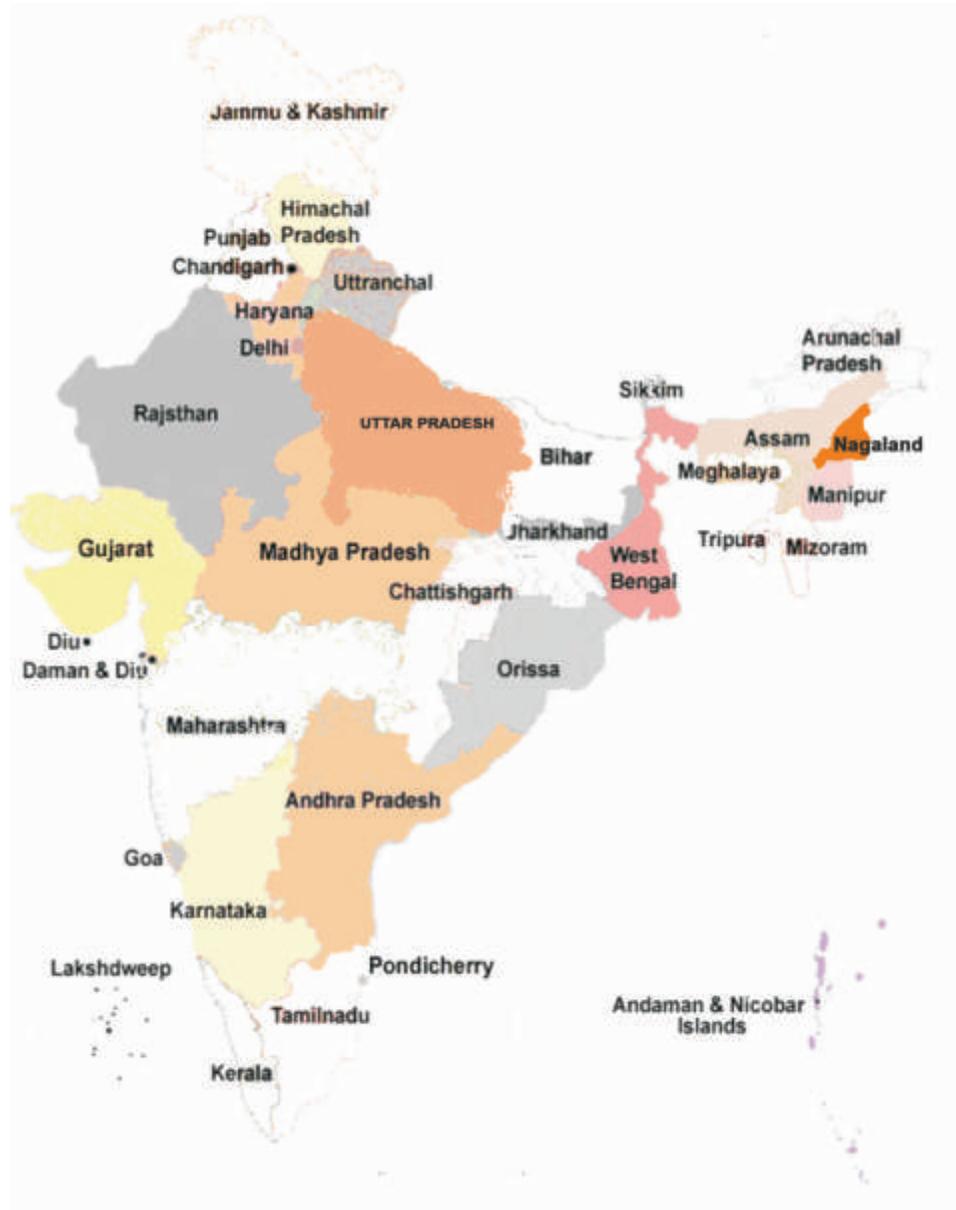
Mr. C.R.Biswas

- Attended a Conference - Petro India on 25-26 September, 2008 “Gas in India – Issues, Opportunities and Challenges”.
- Attended a workshop: Analytical and Advisory Assistance (AAA) India Low Carbon Growth: “Preliminary Results and Recommendations for Power, Households, Transport and Agriculture Sectors”, held on April 23rd, 2009 at World Bank, Lodi Estate, New Delhi.
- Attended a workshop “Interaction with Secretary”, Ministry of Petroleum and Natural Gas, GOI, organized by India Energy Forum.

Dr. Kansom Sangeeta

- Presented a paper on “Energy Access and Its Implication for Women” in the Pre-Conference Workshop on “Clean Cooking Fuels and Technologies”, held on 16-17th June 2008 at Istanbul, Turkey.
- Attended a Workshop on National Assessments of Impacts of Climate Change on Himalayan Ecosystem and Livelihoods at IIC, organized by MoEF and NATCOM, 11th August 2008, New Delhi.
- Facilitated a UNDP Asia-Pacific Gender Community of Practice Annual Learning Workshop on Climate and Gender, 24-26th September 2008 Colombo, Sri Lanka.
- Attended a meeting on “Development of Solar Cities” organized by the Ministry of New and Renewable Energy, GOI on 30th December 2009 at New Delhi.

7. IRADe Projects in Various States of India



1. Evaluation of Franchises Systems for Rural Electrification: Assam, West Bengal, Nagaland and Rajasthan.
2. Social –Economic Analysis of Bio Diesel: Orissa, Rajasthan.
3. Land-Fill Gas Assessment: Puducherry.
4. Village Energy & Bio Diesel Security from Biomass: Gujarat, Haryana.
5. Minimum Support Price Analysis: Uttar Pradesh and Madhya Pradesh.
6. Marine National Park: Gujarat.
7. Himalaya Ecosystem: Uttarakhand.
8. Evaluation of Solar Thermal Applications: Karnataka, Rajasthan, Uttarakhand, Gujarat, Manipur and Haryana.
9. Gender Health Energy Nexus– Himachal Pradesh.
10. Natural Resource Accounting: Goa and Andhra Pradesh
11. CDM training for Delhi Government

8. List of Recent Projects of IRADe

Projects Undertaken -(2008-2009)				
	R-Research Project D-Dissemination	A-Action Project P-Policy Analysis	O-Ongoing C-Completed	
S.No	Title of the Project	Funding Agency	Type	Status
1	Centre of Excellence for Urban Development on 'Climate change Vulnerability and Adaptation'	Ministry of Urban Development	P	O
2	Climate Change and Mountain Ecosystem	Ministry of Environment and Forests	R	O
3	Solar Industries Rural Project - Nagpur	Solar Industries Ltd	A	C
4	Mapping of Carbon Capture and Storage (CCS) activities in India to promote R&D initiatives	DFID -Department For International Development / British High Commission	P	C
5	Analysis for CCS Technology in context of Indian Power Sector	Department of Science and Technology	R	O
7	Developing CGE Model with Activity Analysis for Climate Policies for India	Ministry of Environment and Forests	R	O
8	Management of Ecosystem of Marine National park, Gujarat in harmony with industrial development	Ministry of Environment and Forests	P	O
9	Demand, Supply and subsidy Analysis for Indian Fertilizer sector	Department of Fertilizer (Ministry of Chemicals and Fertilizers), Government of India	P	C
10	Methane Emission and Pump Test study from Landfill - Puducherry	United States Environmental Protection Agency -(USEPA)	R&D	O
11	Techno -Economic and Socio - Agronomic Analysis of Biodiesel System	Ministry of New and Renewable Energy	R	O
12	Evaluation of SP V Programme / Scheme in India	Ministry of New and Renewable Energy	A	O
13	Study for Evaluation of Solar Thermal Energy Demonstration Programme During Tenth Plan Period	Ministry of New and Renewable Energy	A	O

FOUNDING MEMBERS

Name	Professional / Designations +
Kirit S. Parikh (Chairman)	Economist and Engineer
Jyoti K. Parikh (Executive Director)	Scientist: Energy & Environment
Ela Bhatt	Founder, SEWA
Adi Godrej	Industrialist
Keshub Mahindra	Industrialist
R.A Mashelkar	Ex -Director General, CSIR
Shirish Patel	Consulting, Engineer
Manmohan Singh	Member, Rajya Sabha

* Mr. Hemant Sahai, Sahai Law Consultants, was appointed in 2005 as Honorary Treasurer.

+ At the time of IRADe registration in 2002

INTERNATIONAL ADVISORY BOARD

Name	Position
Mr. Nitin Desai	Currently at ICRIER*
Prof. Amartya Sen	Harvard University
Prof. Gustav Speth	Yale University
Sir Nicolas Stern	UK Treasury
Prof. Joseph Stiglitz	Columbia University



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