

Planning Commission
(LEM Division)

Subject: LEM Division-*Study Proposals that can be taken up under Research Division funding-reg*

Topic1: Female Labour Participation Rate-Reasons for the decline in female labour participation rate since the nineties

(i) Content & Context of the study: A decline in female labour force participation rate is being seen over the last twenty years except for the NSSO survey year 2004-05. The reasons attributed for the decline is the education effect and the income effect. But the maximum number of women who have moved out of the labour force is in the prime age group of 30-44 years.

(ii) Objective: The reasons for these women to move out of the labour force need to be explored in order to frame corrective policy strategies.

(iii) Terms of Reference: The above study can be undertaken using secondary data

(iv) Time Period: The study may be completed in a maximum time frame of four months inclusive of submission of the final report.

Topic 2: State-wise sectoral trends in Employment especially in the non-farm sector

(i) Content & Context of the study: Agriculture sector has noticed a steady decline in employment over the years and the surplus labour has moved predominantly to construction sector. But across States how has been the trend over the past twenty years need to be analyzed to get a better insight of the state-wise worker profile.

(ii) Objective: But across States how has been the trend over the past twenty years need to be analyzed to get a better insight of the state-wise worker profile

(iii) Terms of Reference: The above three studies can be undertaken using secondary data

(iv)Time period: The study can be completed in a maximum time frame of four months inclusive of submission of the final report.

Planning Commission
Water Resources Division

Sub- Priority of Themes proposed in the Twelfth Five Year Plan in connection with the selected thrust areas for research/study under the research and study scheme.

Topic of the Study (i.e. the themes proposed in respect of "Rural Drinking Water and Sanitation") : "Impact of household piped water supply connection on the use of individual household toilets; and on health of the household population" .

1. Introduction:

Provision of clean drinking water, sanitation, and a clean environment are vital to improve the health of our people and to reduce incidence of diseases and deaths. Women spend hours fetching water and that drudgery should be unnecessary. Drudgery is undesirable in itself and it also takes away other opportunities for self-development. Drinking water is less than 1% of the total water demand and should have the first priority among all uses of water.

Out of 16.92 lakhs rural habitations in the country, people residing in about 82,000 habitations (about 5%) have some drinking water sources which are unsafe and have at least one of the five chemical contaminations - arsenic, fluoride, nitrate, iron and salinity. Lack of safe drinking water supply and sanitation facilities have an adverse impact on the health of the population which affects the well-being of the individual and productivity of the country.

2. Terms of reference / Scope:

(a) There is a direct relationship between water, sanitation and health. Consumption of unsafe drinking water, open disposal of human excreta, lack of personal and food hygiene have a direct bearing on the high infant mortality rate and are also the causes of a host of medical problems. There is an effort to provide safe and adequate drinking water to the entire population. To address the issue, Government of India has amended the provisions of the National Rural Drinking Water Programme (NRDWP) and is focusing on water quality issues.

(b) India cannot achieve real development if majority of its people live in unhealthy and unclean surroundings due to lack of access to safe water and sanitation. Poor water and sanitation facilities have many other serious repercussions. A direct link exists between water, sanitation and, health & nutrition and human wellbeing. Consumption of contaminated drinking water, improper disposal of human excreta, lack of personal and food hygiene and improper disposal of solid and liquid waste have been major causes of many diseases in India. Large number of people suffers from water related illnesses.

(c) Children, particularly girls and women are the worst affected. Many children, particularly girls, drop out of school and are denied their right to education because they are busy fetching water or are deterred by the lack of separate and decent sanitation facilities in schools. Women often suffer from lack of privacy and need to walk large distances to find a suitable place for defecation in the absence of household/ appropriate neighbourhood toilet facilities.

(d) Poor farmers and wage earners are less productive due to illness, and national economies suffer. Without safe water and sanitation, sustainable development is impossible.

3. Objective of the Study:

(a) The study proposes to examine the impact of coverage of habitations with piped water supply through individual household water connection and the use of toilets by comparing the situation between connected and unconnected households on the health of the household inhabitants.

(b) The study may suggest the ways to make the improvement in the situation.

Topic: Social Responsibility in Higher Education in India

Outline of the Study

The 12th Plan has recommended furtherance of social responsibility in higher education. It has recommended to the Ministry of HRD strategies to deepen community engagement by Higher Education Institutions in India.

Yet, there is no data base about the current practices in community engagement in the country. Existing good practices for knowledge sharing need to be studied and documented so that the knowledge base of this innovative aspect of higher education policy can be analysed and disseminated.

Purpose of the Study

- To conduct survey of existing community engagement practices amongst universities and colleges in India
- To classify and analyse the status of such practices in India
- To identify institutional and policy support that can broaden and deepen community engagement in the country
- To launch a portal with this data base for ongoing knowledge sharing and exchange
- To convene a national conference where findings of the study are presented and plans for implementation of the 12th Plan furthered
- To publish a report based on the findings and deliberations of the conference

Scope & Extent of the Study

The study is first of its kind in India. It will be national in scope. A survey is required to cover all the HEIs in the country. Field studies for documenting best practices in community engagement would be essential. A national data-bank can be so created and disseminated through a portal. Findings should be debated in a national conference of VCs, academics and civil society. Published report would act as a guide for deepening community engagement and social responsibility in higher education in the country.

Usefulness of the Study

The innovative aspect of 12th Plan for strengthening social responsibility in higher education needs adequate knowledge base to be implemented. The study can analyse the present situation and make recommendations for deepening community engagement and social responsibility in higher education.

2.

Topic: Management Education in India: Status, trends and reforms

1. Outline of the Study

Business and management programmes in the country is one of the areas of highest growth rates in the education space over the past 50 years. Given the relationship between management education and the business world, market forces such as globalization, technological change, and new workplace requirements, may affect business education more than any other branch of academia.

There are 3556 MBA institutes and 288 PGDM colleges in country. The total number of seats for management courses has increased from 11480 in 2007-08 to 313920 in 2011-12. In recent years, however, many B-schools have struggled to fill their seats. Some B-school have even requested to reduce their current intake. Around 58 per cent of young Indians suffer from some degree of skill-deprivation.

2. Purpose of the Study

- To describe the current status of management education in India.
- To explore the emerging trends of management education in India.
- To describe the challenges and constraints faced by management institutions, and propose the reform needed in management education in the country.
- To convene a workshop in which findings of the secondary data analysis shall be shared and discussed with the experts.

3. The Scope and Extent of the Study

The focus of business management education in any country ought to be towards preparing business leaders of future. Thus, it becomes increasingly important to study whether the current pattern of management education is actually working towards building leaders of tomorrow or not. This can be explored by studying the current status, changing trends and the need for reforms in the management education.

4. Usefulness of the Study

The study is required to understand the impact of quality of management courses on employability of an individual. Findings of the study would be useful for policy makers in formulating the regulatory framework, monitoring the quality of management education and also in increasing the skills and employability of management graduates.

3
Topic/: Status of Women in Science among Select Institutions in India:
Policy Implications

1. Outline of the Study

International data during the past decade suggest that the number of women in most areas of science and engineering has continued to grow, in leaps and bounds. Quantitative surveys indicate the persistence of the gender gap-in terms of opportunities, salaries, and career advancement-remains a challenge that needs to be addressed.

In India, despite the increasing number of women in higher education in Science, women's participation at higher levels of Science in tenured research positions has shown little increase¹ Women constitute over one-third of the total Science graduate and post-graduate degree holders but comprise only between 15-20 percent of the tenured faculty across research institutions and universities in India.

2. Purpose of the Study

- to conduct a pilot study to critically examine the best practices of promoting and retaining women in science among the different types of higher education institutions in the country.

3. The Scope and Extent of the Study

This may be a pilot project to cover the sample of institutions of different kinds like the IITs, IISERs, CSIR, ICAR, institutes of National importance- IISc., CFTRI etc. Based on the insights of this phase of the study, a national project covering sample higher education institutions throughout the country could be launched.

4. Usefulness of the study

Advance in Science careers begins at the earliest stage soon after PhD, it is important for women to establish themselves during their early 30s, a period that coincides for most Indian women with marriage and family commitments. Breaks or temporary research positions of 3-5 years during this period do not offer the advantage of moving up the ladder at a later stage when family commitments take less time. Thus, as a compromise, a large number of qualified women scientists opt for under-graduate or school level teaching, while others completely drop out of Science. The finding of the study will help evolving favorable policies for the willingness and need for women to stay active in research despite their other responsibilities.

PLANNING COMMISSION

ENERGY DIVISION

Name of Study: Analysis of the Food Security-Water-Energy Nexus in India

Background of Study: In India, the agriculture sector is the largest (accounting for approximately 80% of ground water use) consumer of ground water. Food security constitutes an important element of the planning process in keeping with an increasing population and further development of the country. Issues linked with food-security are many and varied. Land under agriculture has stabilized, with gross cropped area remaining more or less constant. Further, cropping patterns are also changing due to pricing policies etc. with implications on food security. On the energy front, most of the State governments provide discounted or free electricity to the farmer, which could lead to inefficiency and overuse of ground water in most parts of India. While per capita water availability is decreasing and ground water level is rapidly declining, water requirements across various sectors is increasing at a fast pace. A future increase in urbanization and a consequent increase in energy requirements and related infrastructure could result in intensifying the conflict and competition between agriculture and other sectors for water and energy. Accordingly, there is a need to simultaneously address issues of food security, water supply and energy security.

Focus and Scope of the Study:

1. The study should examine the growth in future calorie requirements and consequent crop requirements for the country, assess the prospects for food production and estimate the energy and water requirements for the same.
2. Planning for adequacy of food production requires an in-depth understanding of the water and energy requirements of not only the agricultural sector, but also that of all the other competing users of both energy and water resources. Further, planning for adequacy of water and energy also needs to consider the spatial element given that agricultural land is limited and climatic factors, soil type, and availability of resources such as water are location specific.
3. Until now, much of the analysis and policy making in India has considered issues related with energy, water, agricultural production and climate change management separately. In order to examine the Agriculture- Water- Energy nexus simultaneously, the study will examine the inter-linkages related to food security, agriculture, climate change water and energy through theoretical modeling and simulated scenario building within an integrated modeling framework.

Sample Size:

The study will use secondary data, given that the Food-Water-Energy nexus is intended to be examined state-wise at the pan-India level.

Expected Outcomes of the Study:

1. This study is expected to provide a deeper understanding of the requirements of water and energy in the agriculture sector over the next few decades.
2. A deeper and holistic understanding of the inter-linkages and issues through an integrated analytical framework would provide important insights and directions to planners and help in policy making for food, water and energy security.
3. The study would help identify ways for more efficient and sustainable use of water and energy while planning for India's food security.
4. An ultimate objective of the larger study theme is also to eventually develop a map of water demand and water availability disaggregated at the district level in order to examine water stress in the future with a focus on food security for the country.

Topic:

P. / MGNREGA and National Skill Development Mission: Possibility for convergence
(Impact on deskilling of artisans and suggestions to tackle its impact.

a) **Statement of Objective:** The objective of MGNREGA is to enhance the livelihood security of the poor households in the rural area by providing at least 100 days wage employment guarantee to every household whose adult members are voluntarily willing to do unskilled manual work. In rural India, apart from the agricultural and allied sector, large number of work force is traditionally self employed and engaged in artisanal and other works pursued from one generation to another without formal training. These occupations have been under stress due to radical changes in economy over the period of time. The change in local demand and needs, use of machines and technology, unavailability of infrastructure, transport and connectivity is adversely affecting these occupations and their livelihood. Due to lack of opportunities and enabling environment, the rural people acquainted with traditional skills are often taking-up unskilled works. Since MGNREGA is primarily targeting unskilled workers, there is an apprehension that it is working as one of the factor for deskilling the rural people. Thus there is a need to assess the impact of MGNREGA on such people engaged in rural area and explore the possibility to cover unskilled workforce in MGNREGA at present under the National Skill Development Mission (NSDM) having target to skill 500 million people in the country by 2022.

The purpose of the study is to explore the possibilities of skill development initiative for rural artisans and other people perusing traditional occupation now working under MGNREGA to have sustainable livelihood in the long term. Then they will be able to get better income through skill development rather than perusing unskilled wage employment under MGNREGA. The study may cover at least 10 districts of major poverty centred States spread across the country including North Eastern States, specially areas having major concentration of artisans.

b) **Outline of the task to be carried out:** The study will focus on skills available with the people engaged in MGNREGA and explore the possibility of up-scaling their skills to have sustainable livelihood opportunity instead of working as unskilled manual worker under MGNREGA. How these people can be brought under the preview of NSDM to get the benefit of existing scheme of various

Ministries and private initiatives through National Skill Development Corporation (NSDC) etc. A mix of survey of target beneficiaries and review of existing policies may be considered for achieving the study results.

- c) **Schedule for the completion of tasks:** The total time for the study may be in between 6 to 9 months, but should not be more than 12 months.
- d) **The support or inputs to be provided by the Ministry or Department to facilitate the consultancy:** The required data of MGNREGA workers and other beneficiaries could be provided by concerned ministries in selected districts to facilitate consultancy.
- e) **The final outputs that will be required of the consultant:** The study should be useful to assess the impact of MGNREGA on artisan and other people perusing traditional occupations in rural area. It is expected to come up with a roadmap/framework for providing them sustainable livelihood and income generation opportunities through skill development, ensuring appreciable increase in their income over a period of time.

Topic/Subject: "TO EVOLVE A ROAD MAP TO BOOST INDIAN TEXTILE AND APPAREL EXPORTS"

(a) BROAD PRODUCT CATEGORIES:

- APPARELS
- MADE-UPS
- FURNISHINGS
- GARMENT ACCESSORIES
- FABRICS
- YARNS
- FIBRES
- TECHNICAL TEXTILES
- KNITWEAR
- NON-WOVENS

SUB CATEGORIES: ALL THE ABOVE CATEGORIES SHALL INCLUDE THE PRODUCTS MADE OF NATURAL FIBERS, MANMADE FIBERS, SYNTHETIC AND REGENERATED FIBERS.

PROPOSED TORS FOR THE STUDY:

1. TO MAP THE EXISTING POLICY AND REGULATORY FRAMEWORK OF THE GOVT. OF INDIA FACILITATING EXPORTS OF EACH OF THE PRODUCT CATEGORIES
2. TO IDENTIFY MITIGATING FACTORS WITHIN THE ABOVE POLICY WHICH HINDER OR RETARD EXPORTS AND SUGGEST REMEDIAL MEASURES WHICH ARE QUANTIFIABLE AS WELL AS PRACTICABLE.
3. TO MAP THE COMMODITY WISE NON FISCAL EXPORT PROMOTIONAL MEASURES ADOPTED BY THE GOVT. AND INDICATE TO WHAT EXTENT THESE HAVE DELIVERED THE INTENDED BENEFITS AND TO IDENTIFY CRITICAL GAPS IF ANY, INCLUDING A SUGGESTED ROAD MAP TO FULFILL SUCH GAPS.
4. TO MAP THE COMMODITY WISE FISCAL EXPORT PROMOTIONAL MEASURES ADOPTED BY THE GOVERNMENT AND INDICATE TO WHAT EXTENT THESE HAVE DELIVERED THE INTENDED BENEFITS AND TO IDENTIFY CRITICAL GAPS IF ANY, INCLUDING A SUGGESTED ROAD MAP TO FULFILL SUCH GAPS ALONGWITH ITS FINANCIAL IMPLICATIONS OVER A FIVE YEAR TIME SPAN .
5. TO IDENTIFY COMPETING COUNTRIES FOR EACH OF THE ABOVE PRODUCT CATEGORIES, INDICATE THEIR RESPECTIVE MARKET SHARES VIS A VIS INDIA'S SHARE OVER THE LAST FIVE YEARS.
6. TO MAKE COMPARATIVE STUDY OF EXPORT PROMOTION POLICY FRAME WORK OF THE FIVE TOP COMPETING COUNTRIES FOR EACH PRODUCT AND MAP COMPARATIVE LIST OF ADVANTAGES OR DISADVANTAGES FROM INDIA'S STAND POINT AND SUGGEST POSSIBLE ROAD MAP TO ADDRESS CONCERNS AFFECTING INDIA'S EXPORTS.

Subject : - Priority of themes proposed in the 12th Five Year Plan in connection with Selection of Thrust areas for Research / Study under the Research and Study Scheme.

Reference : - PC UO No. O-15026/14/13- Research, Dated 11.12.2013.

Reference to the above, the undersigned is directed to request you towards the consideration of following additional proposals related to the Research Studies under the Agri. Div., Planning Commission during the 12th Five Year Plan Period. This is in continuation of recently submitted proposals, which were communicated from these Division earlier.

Sectors	Field of Studies / Topics
Social	Participation of women communities in Fisheries Sector with the special reference to Coastal States and opportunities for income securities.
Developmental	Impact of auto stocking and external stocking in major reservoirs of India.
Institutional	Evaluation Studies of National Fisheries Development Board (NFDB), Hyderabad.
Frontier Sector	Study of Energy Alternatives in Fisheries Sector with the Special Reference to Marine Fisheries.

All these topics are to be submitted as per Annexure-I

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✓ Director (Research)
Research Division,
Planning Commission

Planning Commission
SER DIVISION
Dy. No. 2296
Date 6/1/14

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Subject: Priority of themes proposed in the 12th Five Year Plan in connection with Selection of Thrust areas for Research/Study under the Research and Study Schemes.

Research Division may please refer to their letter No. Q-15026/14/13-SER dated 12th December, 2013. The following themes are proposed under the Research and Study Scheme during 12th Plan.

i) Rashtriya Krishi Vikas Yojana with its thrust on de-centralized planning has been a major initiative of the Government of India taken up during the 11th Plan. RKVY provides additional central assistance to the State Governments for planning and implementing projects under agriculture and allied sectors. RKVY has not laid down conditions on identification, planning and implementation of these projects. It is almost 7 years since this approach has been followed. There is a need of evaluation of the scheme specifically with reference to the following questions.

- a) To what extent RKVY has succeeded in pushing forward the concept of comprehensive district agricultural planning (C-DAP)? What has been the response of the State Government in taking the C-DAP approach forward? What are the constraints in this regard?
- b) Impact of RKVY on the overall agricultural development in the State in terms of filling the gap in financial resources, bringing in institutional changes and provision of additional resources by the States to the agriculture sector.
- c) The nature of projects taken up by the State Governments specially in formulating innovative schemes Vs multiplication of the ongoing activities of the States. Creation of assets with long term benefits to the farmers Vs. providing beneficiary oriented subsidies.
- d) Monitoring mechanisms put in place by the State Governments and Central Ministries.
- e) Mechanisms for deciding costs and subsidies and standards under RKVY by the State.

ii) The 12th Five Year Plan as well as previous plans highlights the necessity for undertaking reforms in the agriculture marketing sectors. Some states have taken steps on an ad hoc basis to allow investment in setting up agricultural marketing infrastructure, contract farming for other alternative marketing channels, however, the overall impression continues that the pace of such reforms have been extremely slow. Study is required to consider, State-wise,

- a) The initiative taken up by the State
- b) The impact of the such reforms
- c) The efforts of the Government both the Central and the State to carry forward the agricultural marketing reforms.
- d) Present State of the functioning of mandies setup under APMC acts and the reforms required for their efficient functioning.
- e) The direction of agricultural marketing reforms for the future.

RO(Rao.)

P.u. immediately. All these papers should be brought up for discussion in tomorrow's meeting.

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[Signature]
- 19-12-2013

1. INTRODUCTION-RESEARCH AND STUDY SCHEME

1. Main Activities supported

India is the second largest in Aquaculture production in the World. Fish production has increased from 41.57 Lakh tonnes (24.47 lakh tonnes for marine and 17.10 Lakh tonnes for inland fisheries) in 1991-92 to 82.90 Lakh tonnes (32.20 Lakh tonnes for marine and 50.70 Lakh tonnes for inland fisheries) in 2010-11.

The physical resource base under the Fisheries Sector encompasses rivers, lakes, reservoirs, ponds, wetlands and other allied versatile water bodies. The biological manipulation of candidate species on harnessing physical resource supports the production process, which ranges from extensive to intensive methods of capture and culture fisheries.

In India, approximately more than 1 million population is directly or indirectly associated with the capture and culture fisheries production systems and classified as fishermen / fisherwomen communities (by caste and creed) besides fish farmers, who are practicing inland fish culture practices by tradition / inheritance.

During the later period of 9th Five Year Plan, the fisheries sector has drawn considerable attention to achieve nutritional security in terms of supplying cheap and easily digestible animal protein to the growing population. In the backdrop of this concept the esteemed Institution, the National Fisheries Development Board was formed as an autonomous body under the DAH,D&F, MoA. The NFDB had implemented series of fisheries developmental activities with the participation of Coastal and Inland States including UTs.

2. The Objective of the Study

The objective of proposed studies is aiming towards to assess and evaluate the ground situations to adopt / upscale the future course of action / activities, enrichment of fisheries enhancement approaches. The studies will assist in finding the gaps and to offer need based efforts to mitigate the shortcomings. The drive related to the studies will be targeted towards :

- Assessment of present situations and evaluation of past activities.
- Addressing the unattended areas.
- Development of a cohesive model and approach towards convergence.
- To improve the delivery mechanisms
- Adoption of comprehensive management practices
- Sustainable growth approaches and designing of bio-economic model.
- Gender neutrality approaches.
- Technology adoption and to explore the possibility of creation for Fisheries Estate.
- Modalities for better operational & financial management involving Central and State Agencies.

II. GENERAL CONDITIONS AS APPLICABLE FOR ENTIRE STUDIES

3. Main components under the proposed studies

Research Studies :

- Participation of women communities in Fisheries Sector with the special reference to Coastal States and opportunities for income securities.
- Impact of auto stocking and external stocking in major reservoirs of India.
- Evaluation Studies of National Fisheries Development Board (NFDB), Hyderabad.

4. Eligibility of Institutions to carry out Research Studies

The expression of interests to carry out proposed Research Studies will be based on previous record / ability of the Institution. The competency of agencies will be adequately appraised prior to offer the decision for specific study as envisaged under the Fisheries Sector, Agriculture Division. The framework of Research Studies will be designed by the Division; in case of need based requirements other allied agencies may be consulted. The Research Project will invariably adhere the guidelines of the Research Division, Planning Commission as issued during October, 2013.

III. SUPPORT TO RESEARCH STUDY PROPOSALS

5. Procedures for inviting / dealing with disposing of Research Study Proposals under the Scheme

The subject matter division will offer its recommendations in order to take up the studies on selection of Institutions of Repute with appropriate terms and conditions on consideration of studies of special importance, eligibility analysis, procedures as regarded procurement of services and quality parameters. The Research Evaluation Committee will devise its own procedures while selecting the proposed study projects. However, the scope of proposed studies has special importance and priority status in the backdrop of Fisheries Institutional support, promotion of Capture cum Culture Based Fisheries and status of General Neutrality in Fisheries Sector.

6. Amount of Financial Support and Time Limit for proposed Research Studies

The Field Level Proposed Research Studies may involve the financial requirement to the tune of Rs. 20 Lakh / each Project, since Research Studies requiring Detailed Field Survey and Sample Collection activities. The Research Study related to the Institutional Evaluation may involve Rs. 10 Lakh. In all the cases, appropriate time line will be spelt out and the maximum period of extension may be granted for six months.

7. Assessment and Review of Progress of Studies

The details of questionnaires, progress reports will be reviewed quarterly by the subject matter division in pursuance of framework / designs for the proposed Research Projects, as envisaged. The copyright of the Published Project Report of Research Studies shall vest with the Planning Commission. The SMD, Planning Commission may share the report with the respective Ministry / Deptt. to offer the competency / value to future propositions.

8. Research Study Proposal Format.

(i)	Literature Review on the Subject of the Study with Bibliography	(ix)	Tabulation arrangements
(ii)	Relevance and Need of the Study	(x)	Case Studies
(iii)	Objectives	(xi)	Synopsis
(iv)	Hypotheses to be tested	(xii)	Staffing pattern
(v)	Type and Methodology	(xiii)	Budget
(vi)	Reference period / Base year of the proposed study	(xiv)	Time Frame/Project Duration
(vii)	Statistical Design and Tools	(xv)	Bio-Data of the Project Director
(viii)	Major variable for data collection	(xvi)	Brief of the Institution

9. Format for submission of Research Study Proposal

1	Name of the Proposal / Project
2	Study Team Composition
3	Terms and Conditions of Employment/Association
4	Other activities or personal time granted/proposed to be granted by the Institution
5	Name of the Institution
6	Total Budget of the Study Proposed
7	Duration of the Study Proposed

PLANNING COMMISSION

INTERNATIONAL ECONOMICS DIVISION

Name of Study: Application of Integrated Macro Economic Energy Modelling for Addressing Various Policy-Relevant Issues

Background of Study:

Energy-economy-environment models are used to address various dimensions of sustainable development and the results of these models can inform policy making at both national and international levels. Among such models, computable general equilibrium (CGE) models are useful in highlighting the nature and degree of changes of economic outputs across the different sectors of an economy due to changes in policy interventions in specific sectors. These policy interventions can include green technological interventions, changes in import, export and custom duties, or variation in the tax/subsidy components across sectors.

Rational pricing policies play a key role in shaping energy and resource choices by influencing consumer behavior, development and uptake of technological solutions as well as use of limited resources (i.e. land, water, energy). An appropriate system of incentives and disincentives designed via judicious taxes and subsidies across various sectors can play an important role in guiding investment decisions and steering the economy's growth in a sustainable direction.

A CGE model can indicate how an economy will behave on the supply and demand sides due to changes in different policy parameters. The results of these changes can help in guiding the planning process towards sustainable production and consumption patterns considering the issues of equity and development.

Focus and Scope of the Study:

1. The intent of the study will be to set up the social accounting matrix (SAM) for the Indian economy with greater detailing of the energy resources and related parameters on the demand and supply sides and integrate this with energy system models. Imports and exports of energy resources would be linked with domestic and global prices. The integrated macroeconomic energy model would help planners to examine how households, prices of labour and goods market within the Indian economy behave with a change in global/domestic fuel prices and changes in energy demand across sectors.
2. The main aim of the exercise will be to find out how prices, supply and demand of goods respond to a change in fuel prices due to reduction/elimination of subsidies and imposition of taxes on petroleum and other fuels and variation in sectoral energy

demands. The integrated macroeconomic energy model would help envisage how an elimination of subsidy or a tax imposition on these petroleum and fuel products (which can be diesel, petrol, kerosene, fertilizer, naptha, etc.) creates an overall change in the demand and supply of goods and services within the Indian economy by triggering changes in energy demand across the sectors of the Indian economy. It will also showcase the changes in income distribution across the various household classes of the Indian economy for elimination of subsidy or a tax imposition on these petroleum and fuel products.

Expected Outcomes/Deliverables:

As a part of the larger strategic research cooperation, the research is envisaged to contribute to a long term policy relevant research agenda to expand the integration between the CGE and pre-existing energy models, going beyond current research themes, to include tax and subsidy issues. Eventually the aim is to be able to examine in an integrated manner a) interventions dealing with energy policy aspects, b) resource modelling, c) emission projections for policy negotiations.