

Planning Commission  
(S&T Division)

Sub.: Study proposal on National Natural Resource Management System (NNRMS) – use of Natural Resource Information in planning process

**I. Statement of Objectives:**

**Aim of study:**

Advanced technologies of Satellite and aerial remote sensing, Geographical Information Systems (GIS) precise positioning systems, data base and networking infrastructure in conjunction with advanced ground-based survey techniques have been put to use in the last three decades across sectors. For instance, whether it is a systematic inventory of natural resources available estimated using remote sensing data or the setting up of new National Crop Forecasting Centre in the Ministry of Agriculture to use advanced technologies of satellite and remote sensing data or the identification of potential fishing zones for fishermen, the use of advanced technologies of satellite and aerial remote sensing are quite significant. Also, the emergence of NNRMS, a national level inter-agency system for integrated natural resources management in the country for supporting the optimal utilisation of country's natural resources is another major outcome of application of satellite and remote sensing data.

**Areas of study:**

The NNRMS activities are steered through nine NNRMS Standing Committees viz. (i) Agriculture & Soils, (ii) Bio-Resources, (iii) Geology and Mineral resources, (iv) Water Resources (v) Ocean Resources and Meteorology (vi) Cartography & Mapping, (vii) Urban Management (viii) Rural Development and (ix) Training & Technology. Each Standing Committee is chaired by Secretaries of the respective departments of the Government of India and consisting of experts from major user departments. The compendium could be prepared based on data contained in various standing committee reports.

**Reasons for study by External Agency:**

The expertise for collection and dissemination of remote sensing data is available with Department of Space. In order to bring out the achievements / challenges in use of advanced technologies of satellite and aerial remote sensing data since 1986 across sectors as well as to trace the salient features of achievements of NNRMS, the study by the external agency would evaluate the accomplishments made by PC-NNRMS with specific reference to its mandate and its role in enabling an informed decision making in natural resources development and management of the country.

**Sample size:**

Secondary data could form the basis for the report. The Data may be collected from the Department of Space, Minutes of the standing committee meetings, Minutes of PCNNRMS meetings. Interviews with users of data in sectors (i) Agriculture & Soils, (ii) Bio-Resources, (iii) Geology and Mineral resources, (iv) Water Resources (v) Ocean Resources and Meteorology (vi) Cartography & Mapping, (vii) Urban Management (viii) Rural Development, annual reports of specified agencies in these sectors, case studies published by the World Bank and other multi-lateral/Regional agencies in application of remote sensing data for economic development.

## **TOR:**

Evaluate the accomplishments made by PC-NNRMS with specific reference to its mandate and its role in enabling an informed decision making in natural resources development and management of the country.

Address the accomplishments and benefits made in application of remote sensing technology through the efforts made by various standing committees in terms of integrating conventional techniques and remote sensing techniques and evolving improved methods for management of natural resources in various sectors.

Assess the national resource survey and management applications carried out in the country in major areas using remote sensing technology and assess its effectiveness in terms of timeliness, accuracy, benefits and cost-savings attributable to the use of remote sensing technology.

The application by government agencies and efficacy in improving scheme & design implementation by user departments.

Evaluate the effectiveness of implementation strategies including Regional Remote Sensing Service Centres (RRSSCs) and State Remote Sensing Applications Centres (SRSACs) and organisational linkages and suggest measures, if any, for further improvement.

Assess the capacity building efforts made in the area of Space based Earth Observation technology and its application both in terms of infrastructure development and human resources development including the educational programme.

Assess the participation of Private Sector and Industry through Entrepreneurs programme and suggest a partnership venture models for business development in the area of Space based Earth Observation technology and its application.

Suggest mechanism for effective involvement of NGO groups for providing the most crucial link between the information generation mechanism and implementation mechanism to address the 'last mile' problem.

## **II. Outline of the tasks to be carried out:**

The major activities of NNRMS include determining user/application needs for remote sensing; conceptualization and implementing remote sensing space segments with necessary ground-based data reception, processing and interpretation facilities; establishing utilization systems for using remote sensing images and conventional data for various applications and resource management activities. Keeping these activities in perspective, the report may attempt at presenting a factual and analytical tracing of achievements.

## **III. Schedule for completion of tasks: One year**

The phasing of time schedule is as follows:

1st quarter of the year: Data collection and desk study

2<sup>nd</sup> quarter of the year: Analysis and validation of data through 2-3 workshops

3<sup>rd</sup> quarter of the year: 1st Draft Report

4<sup>th</sup> quarter of the year: submission of 2<sup>nd</sup> draft report & final report/document

**IV. The support or inputs to be provided by the Ministry or Department to facilitate the consultancy:**

Department of Space (DOS) is the nodal agency for implementing NNRMS in the country and the Secretariat of NNRMS is housed in the ISRO Headquarters, Bangalore. The necessary data/inputs may be obtained from Department of Space, Antriksh Bhavan, New Bel Road, Bangalore. Further, the NNRMS activities are steered through nine NNRMS Standing Committees viz. (i) Agriculture & Soils, (ii) Bio-Resources, (iii) Geology and Mineral resources, (iv) Water Resources (v) Ocean Resources and Meteorology (vi) Cartography & Mapping, (vii) Urban Management (viii) Rural Development and (ix) Training & Technology. Each Standing Committee is chaired by Secretaries of the respective departments of the Government of India and consisting of experts from major user departments. The standing committees may also be approached for inputs.

**V. Final Outputs:**

The document/report prepared may include compendium of achievements in use of advanced technologies/ etc and remote sensing data. The compendium would list relative achievements vis-à-vis achievements in other countries (where case studies are available) as well as achievements across time span as perceived by users in India.

The study may include the role of PC-NNRMS in enabling decision making in natural resources development, and may evolve methods for management of natural resources in various sectors.

The study may identify the cost savings in managing the natural resources in the country by the use of remotes sensing technology vis-à-vis conventional techniques.

The study may also identify the gaps in the NNRMS scheme from application point of view by the user ministries/agencies, and may suggest ways in improving scheme by user departments at the time of its implementation.

The study may make an assessment of the efforts made by the users' ministries in capacity building in the area of Earth Observation.

Planning Commission  
(Industries Division)

**Name of the Study:**

TOPIC

'Technological and scientific' issues and 'technological options' in development of electric mobility.

**Objective of the Study:**

Planning Commission is in the process of developing 'policy options' towards promotion of electric mobility in public as well as private transport. The proposed study will cover the 'technological and scientific' issues and 'technological options' in development of electric mobility.

The proposed study is one of the sub-study for developing an appropriate policy framework.

**Scope of the Study:**

The study will clarify the question whether electric mobility can be introduced or enhanced, and if so, how in each of public and private modes of transport. The different modes of transport to be covered in the study are personal transport vehicles (car, two wheelers etc.), public transport (buses, taxis, mass transit and trains) and goods traffic (vans, trucks and trains). The study will look at the different technical options that may be available in any given mode of transport.

The study is exploratory as well as analytical in nature. The thrust will be on 'technological issues' but the study will as well cover status of application/ development of technologies in the automotive/ transport industry. The study/assessment will be utilized for 'scientific and technological' interventions as well.

The study will conclude the 'technological and scientific' issues and 'technological options' for development and promotion of electric mobility. The options will be backed by techno-economic argument.

**Background of the Study:** Enclosed at Annexure-I

**Capable Agency/ Institution:** Indian Institute of Sciences, Bangalore

**Name of the Study:**

'Technological and scientific' issues and 'technological options' in development of electric mobility.

**Background of the Study:**

1. The number of motor vehicles in India has been growing at about 10 per cent per annum, while passenger and freight activity by road increased 15 and 6 per cent per annum respectively between 2001-02 and 2005-06, the last year for which data is available. In turn, the fuel consumption has also increased, with petrol and diesel consumption increasing 10 and 8 percent respectively over the Eleventh Plan period. GHG emissions from the transport sector have also grown at 4.5 per cent per annum between 1994 and 2007 (para 4.88, 12th Plan). As per TERI's estimates, the total number of on-road vehicles in India in 2030 could be close to 540 million under a 6% GDP growth rate scenario and 680 million under an 8% GDP growth rate scenario (TERI, 2006).
2. The proposed study is in the background of recognition that transport based on use of electricity (including hybrids) are emerging as an environment friendly option in public and well as private transport segments. India's National Urban Transport Policy, 2006 inter alia envisages encouragement to cleaner technologies so that the problem of vehicular pollution can be more effectively dealt with. National Electric Mobility Mission Plan (NEMMP) 2020 unveiled in January, 2013 also recognize the potential that exists for full range of efficient and environmentally friendly electric vehicles.
3. Though projections show that in the future also petroleum fuels will dominate the transport sector, other alternatives have been emerging, though slowly. In addition to introduction fuel efficiency norms for the automobile industry, there is a need for development of alternatives fuel based transport.
4. India's National Urban Transport Policy, 2006 inter alia envisages encouragement to cleaner technologies so that the problem of vehicular pollution can be more effectively dealt with. Besides, renewable sources need to be tapped as a measure of sustainable development and in recognition of India's energy security concerns. The Central Government would, therefore, encourage the research, development and commercialization of cleaner technologies.
5. Towards this direction, the Hon'ble Prime Minister has unveiled the National Electric Mobility Mission Plan (NEMMP) 2020 in January, 2013. The NEMMP 2020, the mission document for the NMEM sets the vision, lays the targets and provides the joint Government - industry vision for realizing the huge potential that exists for full range of efficient and environmentally friendly electric vehicle (including hybrids) technologies by 2020. The document is based study conducted jointly by the Government and the Industry. The implementation and roll out of the NEMMP 2020 will be done through various specific schemes, interventions, policies that are currently under formulation.
6. Planning Commission in the 12th Five Year Plan has given a thrust on the sustainable development and has identified a range of areas requiring action. Primacy is accorded to public transport, however, there is space for argument for subvention for personal transport also based on informed techno economic argument.

Topic :

**Nutrient based subsidy policy for decontrolled phosphatic & potassic (P&K) fertilizers**

India's dependency on import at present is to the extent of 25% of our requirement of Urea, 90% in case of Phosphates, either as raw material or finished fertilizers (DAP/MAP/TSP) and 100% in case of Potash. The subsidy outgo increased exponentially by 530% during 2004 to 2009 with about 90% of the increase due to rise in the international prices of fertilizers and inputs. Agricultural productivity did not register increase in commensurate with the increase in the subsidy bill. The MRP of the fertilizers remained constant from 2002 onwards. A Group of Ministers (GoM) constituted to look into all aspects of the fertilizer regime, recommended that Nutrient Based Subsidy (NBS) may be introduced based on the contents of the nutrients in the subsidized fertilizers. The Hon'ble Finance Minister in its Budget Speech 2009 announced for introduction of Nutrient Based Subsidy Policy for Phosphatic & Potassic fertilizers with the objective of ensuring Nation's food security, improving agricultural productivity and ensuring the balanced application of fertilizers.

The Government introduced the Nutrient Based Subsidy (NBS) Policy w. e. f. 1.4.2010 in continuation of the erstwhile Concession Scheme for decontrolled P & K fertilizers (w.e.f. 1.5.2010 for SSP). The Inter Ministerial Committee (IMC) constituted under the Nutrient Based Subsidy Policy suggest the per Kg NBS for 'N', 'P', 'K' & 'S' (Nitrogen, Phosphate, Potash and Sulphur) on annual basis. Based on the recommendations of the IMC the subsidy for P&K fertilizer we are announced on annual basis with approval of the Cabinet.

There has been a stiff rise in delivered cost (MRP + Subsidy) for DAP in past three years i.e from Rs. 21 per Kg (pre NBS price in 2010) to Rs. 41 per Kg. The subsidy was raised to counter the rise in MRP, however, the MRP rise further. Similar rise was also seen in case of MOP. Also it has been observed that the NPK balance was disturbed in case of consumption of K being 30% down compared to N and P.

It appears that the subsidy bill is getting escalated every year but impact of such initiative does indicate in terms of yield and productivity. Hence, it suggested to conduct a study to assess the needs and otherwise it can be addressed.

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PLANNING COMMISSION  
(ENERGY DIVISION)

Research

STUDY ON ASSESSMENT OF WATER FOOTPRINTS OF INDIA'S LONG-TERM ENERGY SCENARIOS

BACKGROUND

The Planning Commission initiated the development of an energy modeling project, India Energy Scenarios 2047 earlier this year, with energy security as the key consideration, in collaboration with energy sector experts, think-tanks and research organizations. This initiative explores a range of potential future energy scenarios for India, across energy supply sectors such as renewable energy, oil, gas, coal, and nuclear, and energy demand sectors such as transport, industry, agriculture, cooking, lighting and appliances, etc. The outcomes of this model also evaluate costs, emissions, and land-use implications for different energy scenarios.

The outcomes of India Energy Scenarios 2047 model open up opportunities to compare and explore the environmental considerations associated with different energy trajectories for India.

Water availability, in particular, is a key factor in assessing the feasibility of future energy scenarios for India.

- 1.1 The power generation sector is one of the largest consumers of water, and water footprints can vary significantly amongst different power generation technologies.
- 1.2 India also experiences significant regional and temporal variations rainfall and water availability, and there are large disparities in regions of high energy demand, high energy resource availability and water availability.
- 1.3 Given that water is a critical resource for India, and we have access to only 4% of the world's water resources, it is important to further study India's water-energy 'nexus' and water footprints associated with different future energy scenarios for India.

OBJECTIVES

- 2.1 To assess the water footprint of India's long-term energy scenarios
- 2.2 To investigate the potential for improving water efficiency in the sector.

TERMS OF REFERENCE

- 3.1 The study will evaluate the regional water requirement for various scenarios
- 3.2 It will also assess the applicability and economic viability of technological and non-technological measures to reduce water use in thermal power plants
- 3.3 Assess the water footprints of plants using coal washing

#### DELIVERABLES

- 4.1 Draft report of the study will be discussed with stakeholders and sector experts in a workshop.
- 4.2 Study Report - 50 copies