

### Wildlife-Human Interactions – from Conflicts to Coexistence in Sustainable Landscapes

This project studies the impact of wildlife-human conflicts on species populations assessed in relation to their endangered status and viability. The Norwegian Institute for Nature Research (NINA) has here joined forces with the Centre for Ecological Science (CES) at the Indian Institute of Science (IIS) in Bangalore, India. The findings of the study will be disseminated to policy makers in India and Norway and may contribute to the implementation of international conventions such as the UN Convention on Biological Diversity.

### Assessment, Mitigation and Management of Natural Hazards

This is a research collaboration project between the Norwegian Geotechnical Institute (NGI) and a consortium of Indian

research institutions supported by the Indian Department of Science and Technology (DST). The main goal of the research collaboration is to assess, mitigate and manage natural hazards in the context of climate change. The project involves technology transfer and build-up of capacity of partnering institutions.

### Earthquake Risk Reduction in the Himalayas

NORSAR, Norway and the Indian Institute of Technology, Roorkee (IITR) have an ongoing institutional cooperation programme focusing especially on earthquake risk reduction for buildings and installations that are of importance to the society, by providing specific mitigation recommendations, capacity building and institutional strengthening in the field of earthquake engineering in India and Norway.

### Indo-Norwegian Cooperation in Polar Research

In 2008, India's first permanent research station in the Arctic region, located in Ny-Ålesund in Svalbard, Norway was opened. The research base named 'Himadri' conducts round-the-year scientific research in the field of Arctic science with special emphasis on climate change. The Himadri base station is managed by the National Centre for Antarctic and Ocean Research (NCAOR), an autonomous institute under the Indian Ministry of Earth Sciences which has a Memorandum of Understanding on Polar research with the Norwegian Polar Institute

(NPI). The Indian Minister of Science and Technology and Earth Sciences, Shri Prithviraj Chavan visited Svalbard in June 2010 together with Ms Tora Aasland, Norwegian Minister of Research.



Photo: Dr. Rasik Ravindra, NCAOR



Photo: Randhir A. Malhan

### Recovery of Alternative Fuels and Raw Materials and Treatment of Organic Hazardous Wastes in Resource and Energy Intensive Industry

The goal of this project is to increase the treatment capacity for industrial and organic hazardous wastes significantly through co-processing and waste recovery in the resource and energy intensive industry in India. By integrating co-processing and treatment of wastes in cement and steel production and coal based power plants, the project can reduce the need for building new and costly waste incinerators and save non-renewable fossil fuels and raw materials. Such a practice will reduce the overall greenhouse gas emissions, increase waste treatment capacity and reduce releases of hazardous chemicals. The project will be carried out by SINTEF, Norway and the Central Pollution Control Board (CPCB), India.

### Environmental Film Festival - enhancing environmental awareness

CMS VATAVARAN is the only travelling environment film festival in India, a festival that is supported by the Royal Norwegian Embassy. In 2010 the CMS

VATAVARAN Environment and Wildlife Travelling Film Festival & Environment Forum was organized in Shimla, Shillong, Hyderabad, Patna, Port Blair, Ahmedabad, Trivandrum and Bhubaneswar.

### Green Shipping

Norway has cutting edge technology on greening of ships, and is interested in cooperating with India both on implementing existing technologies and developing new ones. Work has been initiated on a project between the Indian and Norwegian authorities and the business sector on the development of environmentally friendly vessels with a view to reducing emissions of greenhouse gases from shipping.



ROYAL NORWEGIAN EMBASSY

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Photo: Ragnar Uåge Pedersen/Bioforsk

## Indo-Norwegian Cooperation on Environment, Renewable Energy, Climate Change



ROYAL NORWEGIAN EMBASSY

## Committed to Sustainability:

### India and Norway are engaged in several arenas of collaboration within environment, clean and renewable energy and climate change:

- ◆ The Norwegian Pension Fund - Global, which is the world's second largest sovereign wealth fund, aims to use fresh funds to buy environmentally friendly shares – or green shares – in India and in other emerging markets.
- ◆ The Ministry of Environment and Forests, Government of India, and the Norwegian Ministry of the Environment have agreed to cooperate on climate change issues and on the implementation of the Clean Development Mechanism of the Kyoto Protocol. India accounts for around 10% of the emission reduction units available under the Clean Development Mechanism (CDM) in terms of volume. The Norwegian Government has decided to over-fulfill Norway's Kyoto commitments by 10%. In this respect, the Norwegian Government is purchasing emission reduction units from several Indian CDM projects. The projects are within renewable energy and energy efficiency.
- ◆ Solar and clean energy, as well as environmental and climate studies, are among thematic priorities in the ongoing cooperation on higher education agreed to by the Indian Ministry of Human Resource Development and the Norwegian Ministry of Education and Research.
- ◆ The Programme of Cooperation under the Indo-Norwegian



Research Agreement, for which the Department of Science and Technology is a partner, includes climate research (including ocean and arctic/polar research), clean energy, geotechnology and early warning systems for geohazards as well as nano-science/technology related to clean energy and solar energy.

The Indo-Norwegian cooperation in the field of climate and environment covers the following fields:

- ◆ Clean and Renewable Energy
- ◆ Climate Change mitigation and adaptation
- ◆ Biodiversity
- ◆ Polar research
- ◆ Hazardous waste management
- ◆ Management of Natural Hazards
- ◆ Advocacy and Gender are cross-cutting thematic areas

- ◆ As part of the Norwegian Government's India Strategy the Research Council of Norway has set up a program supporting Indo-Norwegian research cooperation (INDNOR). This research program will distribute USD 3.56 million per year over a five-year period starting in 2010. In 2009, the Department of Science and Technology (DST) of the Government of India and the Research Council of Norway (RCN) launched a Programme for joint funding of Indo-Norwegian joint research projects in mutually agreed fields to achieve world class scientific results.



### ROYAL NORWEGIAN EMBASSY

#### The Royal Norwegian Embassy in New Delhi: Programs and Projects

The Norwegian Embassy in New Delhi has been mandated by the Norwegian Government to promote cooperation with India on environment, renewable energy and climate change at a governmental, institutional and business-to-business level. Norway is committed to strengthening, intensifying and further developing a mutually beneficial cooperation with India through strategic use of its resources and expertise. The Embassy is funding or in other ways supporting a number of projects within the fields mentioned above.

## Scalable business models for Rural Electrification – Using Solar Energy



The Government of Norway and the Ministry of New and Renewable Energy, Government of India and Scatec are collaborating and co-funding a solar based rural electrification project which aims at developing sustainable and scalable business models for accelerating large scale roll-out of community solar power plants (CSPPs) in India. The pilot projects are being set up in 30 villages in 4 different states in India, namely Uttar Pradesh, Madhya Pradesh, Jharkhand and Jammu and Kashmir. Different models and solutions are being tested with regards to technology and local revenue models, as well as different cooperation models with local Non-governmental organizations (NGOs) and entrepreneurs.

## Clean Energy, Energy Security and Climate Change

The TERI Framework Agreement is an initiative that addresses global and national concerns of energy security and climate change through promoting institutional cooperation between the Indian research institute TERI (The Energy and Resources Institute) and Norwegian and other third party

institutions. The program seeks to bridge knowledge gaps on climate change impacts, design policy instruments and strengthen energy governance mechanisms and institutions.

## Sustaining Rice Production under Changing Climatic Conditions

The objective of the research project ClimARice I is to ensure sustained rice production under changing climatic conditions. ClimARice II is an extension of the previous project and works towards reducing uncertainties in future monsoon projections, demonstrate the applicability of selected adaptation techniques and enhance stakeholders' adaptive capacity to climate change. Key project partners are Bioforsk, Norway, the Tamil Nadu Agricultural



Photo: Ragnar Uåge Pedersen/Bioforsk



University, Coimbatore, and the International Water Management Institute in Hyderabad.

## Impact of Climate Change on Tropical Forest Ecosystems and Biodiversity in India

The Centre for International Climate and Environmental Research (CICERO), Oslo, and the Centre for Ecological Sciences (CES) at the Indian Institute of Science, Bangalore, have collaborated to assess the impact of the projected climate change on forest ecosystems, carbon stocks and the mitigation capacity of forests in India using 'dynamic modelling' and thereby assess the potential of 'adaptation-mitigation' synergy.

## Climate change impacts on river basins in semi-arid areas in India

The project aims to assess the impact of climate variability on the hydrological regimes in the Godavari river basin. The partners also map trends and develop tools and methodologies that will help agencies improve their capacity to manage water resources in a sustainable manner in a climate change context. Bioforsk, Norway, and the Indian Institute of Technology Delhi (IITD), India are the partners.