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New survey of the effects of climate change on India's water supplies offers hope for water stressed regions

Improved integrated water management practices could increase agricultural production, protect natural systems and be a "game changer" for national food security

DELHI (1 February 2012). A major new survey of the likely effects of climate change on India's water resources published today identifies huge challenges to maintaining adequate supplies in the next few decades, but argues that these can be overcome with an integrated, multi-sectorial approach that takes into account water use from farm to river basin level. The book's editors say that more investment, further policy reforms and their implementation will be needed if India is to remain food secure whilst protecting the natural systems on which agriculture relies.

The book, *Water and Climate Change: an integrated approach to adaptation challenges* is the culmination of the three year *Climawater* project, funded by the Norwegian Ministry of Foreign Affairs through Bioforsk, a national research institute in Norway and implemented by the Indian Institute of Technology Delhi, New Delhi and the International Water Management Institute. It will be launched today by the Honorable Minister of Rural Development, Shri. Jairam Ramesh, and the Norwegian Minister of the Environment and International Development, Mr. Erik Solheim. The book draws heavily on research carried out over several years in the Godavari River Basin which covers large areas of the states of Andhra Pradesh (where most of the fieldwork was done), Maharashtra, Orissa, Chhattisgarh and Pondicherry, as well as parts of Karnataka and Madhya Pradesh.

"We are convinced that India can rise to the water supply challenges that climate change will bring," say Dr. A K Gosain of IITD and Dr. Udaya Sekhar Nagothu of Bioforsk, two of the book's editors. "What we have compiled is a comprehensive analysis of the impacts that climate change poses to Indian water management and some potential strategies for addressing this. We believe, in India, this is one of the first studies using a multi-scale integrated approach."

In recent years there has been a revolution in water management thanks to improved computer modeling and satellite remote sensing technology. This has enabled researchers to monitor water use down to farm level, and then apply these observations at the basin scale. Coupled with new social research on how farmers and other water users make water resource decisions, the book's editors believe that this comprehensive methodological approach can give policymakers the holistic overview they need to develop future sustainable and equitable water management strategies.

"It is critical that we adopt a multi-level approach to the problem of climate change and water management," says Dr. K Palanisami of the International Water Management Institute and a co-editor of the book. "We need to look at issues at farm level right up to the whole river basin if we are to successfully deal with the challenges. It is vital that we involve people at all levels and that we look at both social and environmental concerns."

The book makes some key recommendations for India's water managers including the development of "low regret" (meaning with low risk, simple and practical) policies, improving and sharing water databases, plus better dissemination, capacity building and awareness on the likely effects of climate change and how we can adapt to it. The editors hope that the book will encourage similar research in other basins in India.

Water and Climate Change: an integrated approach to adaptation challenges edited by Udaya Sekhar Nagothu, A K Gosain and K Palanisami is published by MacMillan Publishers, India Ltd.

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The Norwegian Institute for Agriculture and Environment, Bioforsk (www.bioforsk.no) is a national R&D institute under the Norwegian Ministry of Agriculture and Food. Bioforsk conducts applied and specifically targeted research linked to multifunctional agriculture and rural development, plant sciences, environmental protection and natural resource management. The strength of Bioforsk lies in its interdisciplinary approach to combine research into consulting services and advices to the government agencies. Bioforsk is involved in a wide range of research and development projects worldwide related to Climate Change Agriculture, water resources, food security, livelihoods and bio-energy.

Indian Institute for Technology, Delhi
IIT Delhi is one of the pioneer technological institution known for its undergraduate and postgraduate teaching that is comparable to the globally best institutions. The Civil Engineering Department of IIT Delhi distinguishes in teaching, research and development in distributed hydrological modeling, irrigation water management, hydraulic modeling, GIS and databases. The faculty of water resources engineering has been very actively involved in some of the prestageous national projects. For example, IIT Delhi has contributed to the communications of India to the UNFCCC by formulating the climate change impact assessment on water resources of India. The group has contributed by formulating a GIS-Based hydrological information system of India (http://gisserver.civil.iitd.ac.in/natcom) that can play a very vital role in the integrated water resources management of the country.

The International Water Management Institute (IWMI) is a nonprofit, scientific research organization focusing on the sustainable use of land and water resources in agriculture, to benefit poor people in developing countries. IWMI's mission is "to improve the management of land and water resources for food, livelihoods and the environment." IWMI has its headquarters in Colombo, Sri Lanka, and regional offices across Asia and Africa. The Institute works in partnership with developing countries, international and national research institutes, universities and other organizations to develop tools and technologies that contribute to poverty reduction as well as food and livelihood security (www.iwmi.org).