Working paper

International Growth Centre

Institutional Reform for Improved Service Delivery in Bihar

Economic Growth, Agricultural Productivity, and a Plan for Reorganising the Minor Water Resources Department

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Institutional Reform for Improved Service Delivery in Bihar: Economic Growth, Agricultural Productivity, and a Plan for Reorganising the Minor Water Resources Department

A report prepared for the Minor Water Resources Department (NWRD), Government of Bihar

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A report on reorganisation of the Minor Water Resources Department for the Government of Bihar.

This report was prepared by the Council on Energy, Environment and Water. The report was commissioned on the request of the Minor Water Resources Department, Government of Bihar to the International Growth Centre, Bihar.

The Council on Energy, Environment and Water (CEEW) is an independent, not-for-profit, policy research institution. CEEW works to promote dialogue and common understanding on energy, environment and water issues in India, its region and the wider world, through high quality research, partnerships with public and private institutions, engagement with and outreach to the wider public. For more information, visit http://www.ceew.in.

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FOREWORD

India's sustainable development depends only in part on national level policy frameworks. The real test of any policy proposal is how it is implemented at the state level. Promoting economic growth while paying attention to social development and environmental sustainability is not an easy task. State governments, district officials and field level officers often face tradeoffs between different policy priorities. This is why the Council on Energy, Environment and Water (CEEW) promotes the development of integrated energy, environment and water plans, so that tradeoffs may be recognised and potential opportunities for co-benefits are identified and exploited.

Bihar's extraordinary economic growth in recent years has raised expectations of continuing high growth rates in future. If this record has to be sustained, then agricultural growth will have to play a critical part. Agricultural development depends, in turn, on increasing irrigation and cropping intensity. And for a state with 96% of the farmers classified as small and marginal, the focus must be on developing and maintaining minor irrigation infrastructure in the state. This was the premise for conducting this study, following a direct request from the Minor Water Resources Department, Government of Bihar. The study focuses on the steps needed to reorganise and strengthen the department to achieve its irrigation intensity targets during the 12th and 13th Five Year Plan periods (2012-22).

This report, Institutional Reform for Improved Service Delivery in Bihar: Economic Growth, Agricultural Productivity and a Plan for Reorganising the Minor Water Resources Department, prepared by CEEW researchers, draws on lessons from eight other states in India, international best practices, consultations with officials in Patna, and field visits to five districts to interview field level irrigation officials, farmers and water user associations. Based on this extensive research, the report offers recommendations for staff allocation and organisational design, groundwater management through improved data collection, maintenance and quality of irrigation infrastructure, and participatory irrigation management via strengthened Water User Associations.

I congratulate the researchers for this comprehensive study, based not just on abstract concepts, but reflecting realities observed on the ground. In this manner, the report has shown how agriculture, irrigation and water management are interlinked in Bihar and kept its focus on the needs of the vast majority of small and marginal farmers in the state. I hope that the recommendations of the report will be considered by the Government and that it will set a benchmark for consultative irrigation and water management reform in other states as well.

Suresh P. Prabhu
Chairperson

Mumbai
26 July 2012

ABOUT CEEW

The Council on Energy, Environment and Water is an independent, not-for-profit policy research institution. CEEW addresses pressing global challenges through an integrated and internationally focused approach. It does so through high quality research, partnerships with public and private institutions, and engagement with and outreach to the wider public. Among its major initiatives, CEEW has: published the 584-page National Water Resources Framework Study for India's 12th Five Year Plan; written India's first report on global governance, submitted to the National Security Adviser; assessed India's 22 gigawatt solar mission; developed an innovation ecosystem framework for India; facilitated the $100 million India-U.S. Joint Clean Energy R&D Centre; worked on geoengineering governance (with UK's Royal Society and the IPCC); created the Maharashtra-Guangdong partnership on sustainability; published research on energy-trade-climate linkages (including on governing clean energy subsidies for Rio+20); produced comprehensive reports and briefed negotiators on climate finance; and supported Bihar (one of India's poorest states) with minor irrigation reform and for water-climate adaptation frameworks.

CEEW's work profile covers all levels of governance: at the global/regional level, these include climate finance, energy-trade-climate linkages, geoengineering governance, and bilateral collaborations with China, Israel, Pakistan, and the United States; at the national level, it covers energy and resource efficiency and security, water resources management, renewable energy policies, India and global governance, and innovation strategies; and at the state/local level, CEEW develops integrated energy, environment and water plans, and facilitates industry action to reduce emissions or increase R&D investments in clean technologies. More information about CEEW is available at: http://ceew.in/.

ABOUT THE AUTHORS

Arunabha Ghosh

Arunabha Ghosh is CEO of the Council on Energy, Environment and Water (CEEW), an independent, policy research institution in India.

He is also associated with Oxford's Global Economic Governance Programme and its Smith School of Enterprise and the Environment. He is involved with the UK Royal Society's Solar Radiation Management Governance Initiative and has co-chaired its international governance working group. He is a member of three track II initiatives: the India-US Dialogue on Climate Change and Energy, the India-Israel Forum, and the Islamabad Dialogue. He sits on the Governing Board of the International Centre for Trade & Sustainable Development, Geneva.

Dr Ghosh was previously Global Leaders Fellow at Princeton's Woodrow Wilson School of Public & International Affairs, and at Oxford's Department of Politics and International Relations. He was also Policy Specialist at the United Nations Development Programme in New York and has worked at the World Trade Organization in Geneva.

Arunabha's interests intersect international relations, global governance and human development, including climate, energy, water, trade and conflict. He currently works on: climate governance (financing, R&D, geoengineering); energy-trade-climate linkages; global energy governance; water governance and institutions; and international regime design. His recent and forthcoming publications include: Governing Clean Energy Subsidies (for Rio+20); Laying the Foundation of a Bright Future (on India's national solar mission); Understanding Complexity, Anticipating Change (on India and global governance, submitted to the National Security Adviser); National Water Resources Framework Study (for India's Planning Commission); Harnessing the Power Shift (on sources and governance of climate finance); International Cooperation and the Governance of Geoengineering (for the Intergovernmental Panel on Climate Change); and three UNDP Human Development Reports (including the 2006 report on water). Arunabha has worked on trade governance for several years (his doctoral thesis on the WTO's monitoring system was nominated by Oxford for the Best Thesis Prize at the British International Studies Association) and previously led research on intellectual property, financial crises, development assistance, indigenous people, extremism and violent conflict.

Dr Ghosh has presented to a former President of India, India's Parliament, the European Parliament, Brazil's Senate, the Andhra Pradesh Legislative Assembly and other legislatures; trained ministers in Central Asia; and hosted a documentary on the water crisis set out of Africa, Diary of Jay-Z: Water for Life, recognised as an Official Honoree at the Webby

Awards. His op-eds have appeared in the Business Standard, Financial Express, India Today, Indian Express, Mint, Seminar, Tehelka, and The Hindu. Dr Ghosh has delivered public lectures in several countries, and been interviewed by ABC (Australia), BBC, NDTV (India) and Voice of America, among other news outlets. He has also been consulted by DFID (UK), UK Ministry of Justice, IDRC (Canada), International Energy Agency, the Commonwealth Secretariat (London), Oxfam International, and Transparency International. He has served as Assistant Editor and Book Review Editor of the Journal of Human Development and Capabilities. In 2011, the Asia Society named him an Asia 21 Young Leader.

Arunabha holds a D.Phil. (Ph.D.) and M.Phil. in international relations from Oxford, where he was the Clarendon Scholar and Marvin Bower Scholar. He holds an M.A. (First Class) in Philosophy, Politics and Economics from Balliol College, Oxford, as Radhakrishnan-Chevening Scholar. He graduated at the top of his class with a B.A. (Honours) in Economics from St. Stephen's College, Delhi University. He lives in New Delhi, India and speaks English, Hindi, Bengali and basic Spanish. He can be contacted at: arunabha.ghosh[at]ceew.in. Some of his publications are available at: http://ceew.in/publications.

Rudresh Sugam

Rudresh Kumar Sugam is a Programme Officer at the Council of Energy, Environment and Water (CEEW), India. He has recently conducted evidence-based research for the Minor Water Resources Department, Government of Bihar exploring institutional reforms that are required in minor irrigation to achieve agricultural growth targets set by the State. He has also worked with the Cola Cola Company advising them on ways to adopt efficient measures for water resource management in their bottling plants. His interest areas include water use efficiency, water resources optimisation, impact of climate change on water resources, Integrated Watershed Management, and sustainable development.
His educational qualifications include a Post Graduate degree in Water Resources Management from The Energy and Resources Institute (TERI) University, Delhi and a B.Sc. in Botany from Kirori Mal College, University of Delhi. His post-graduate dissertation was on storm water pond efficiency with the Yale School of Forestry and Environment Studies, Yale University, United States.

EXECUTIVE SUMMARY

This report is the outcome of a direct request by the Principal Secretary, Dr Deepak Prasad, of the Minor Water Resources Department (MWRD), Government of Bihar to the International Growth Centre (IGC) and the Council on Energy, Environment and Water (CEEW) to conduct a research study on how to reform the Minor Water Resources Department. Agriculture is the mainstay of Bihar's economy and the economic growth of the state is dependent on the growth of the agricultural sector. This growth is, in turn, fuelled by irrigation facilities. With small and marginal farmers having 96% of landholdings, the major share of irrigation (70%) is provided by the minor sources, namely tube wells.

For agricultural productivity and cropping intensity to increase, Bihar's irrigation intensity has to increase from 85% today to 158% in 2017 and 209% in 2022. Given the importance of minor irrigation, the MWRD has a crucial role in the development and maintenance of irrigation infrastructure in order to drive agricultural growth and increase on-farm productivity. However, currently, the MWRD lacks human resources as well as skills and technology. Only 46% of the sanctioned staff positions are filled. The purpose of this study is to advise the MWRD, Bihar on the steps needed to reorganise and strengthen the department to achieve its irrigation intensity targets during the 12th and 13th Five Year Plan periods (2012-22).

The current state of Bihar's irrigation infrastructure and is poor. Of about 4.23 lakh ha. of TW-covered area, operational TWs cover only 1.05 lakh ha. The MWRD's minor irrigation and tube well divisions do not cover all 38 districts and staffing gaps are especially severe at the field level. For instance, of the 619 sanctioned posts for junior engineers, only 132 are occupied by regular staff and another 158 by contract staff (but the latter are not trained).This situation is compounded by an unclear organisational structure and a poor working relationship with the district administration. Financing of projects have also fallen short (only one-sixth of the requested budgets have been allocated to the MWRD). Further, there is poor quality data, limited monitoring of groundwater resources, and little attention to quality control and maintenance of projects. These challenges have meant that the MWRD also suffers from a deficit of trust with farmers, while water user associations have largely failed in the state.

In order to address these challenges, the study covers: assessments of the overall targets (set against past performance); analysis of human resource deficiencies and addressing the appropriate structure and positioning of critical divisions within the Department); steps to improve groundwater management; the imperatives of monitoring, maintenance, and quality control and the organisational and technological needs for the same; and ways to improve participatory irrigation management.

The study drew on a combination of desktop research, intensive interviews, and field visits. The desktop research on national (eight other states) as well as international best practices helped to benchmark institutional designs against which to compare Bihar's performance. This was combined with three rounds of consultations with senior officials in Patna to discuss preliminary hypotheses and for detailed data collection. More importantly, our research covered field visits in five districts, covering 21 blocks, and consultations with more than 100 farmers, water user association representatives, and irrigation officials. The most appropriate and feasible options for Bihar are, therefore, recommended as follows.

Overall Targets to be Achieved (section IV)

Recommendation 4.1: Evaluate performance for both minor irrigation and tube wells based on outcomes (irrigation achievement) rather than merely based on expenditure and investment.
Recommendation 4.2: Explore ways to increase the allocation of NREGS funds dedicated to minor water resources, in line with other states.

Organisational Restructuring: Allocating Staff; Defining Responsibilities (section V)

Recommendation 5.1: Restructure the MWRD along four lines, namely operations (minor irrigation; tube wells), management (monitoring and quality control; human resources), research (data; groundwater), and capacity building (training; participatory irrigation management)
Recommendation 5.2: Increase staff strength for Minor Irrigation and Tube Well Wings
Recommendation 5.3: Shift the lift irrigation functional area to the Tube Well Wing
Recommendation 5.4: Form a Human Resources Wing
Recommendation 5.5: Create a Water Management Training Institute

Groundwater: Better Data for Strategic Management (section VI)

Recommendation 6.1: Give Groundwater Directorate a larger role
Recommendation 6.2: Focus on water quality and testing
Recommendation 6.3: Develop detailed water maps for Bihar

Maintenance & Quality: Monitoring Performance; Applying New Technologies (section VII)

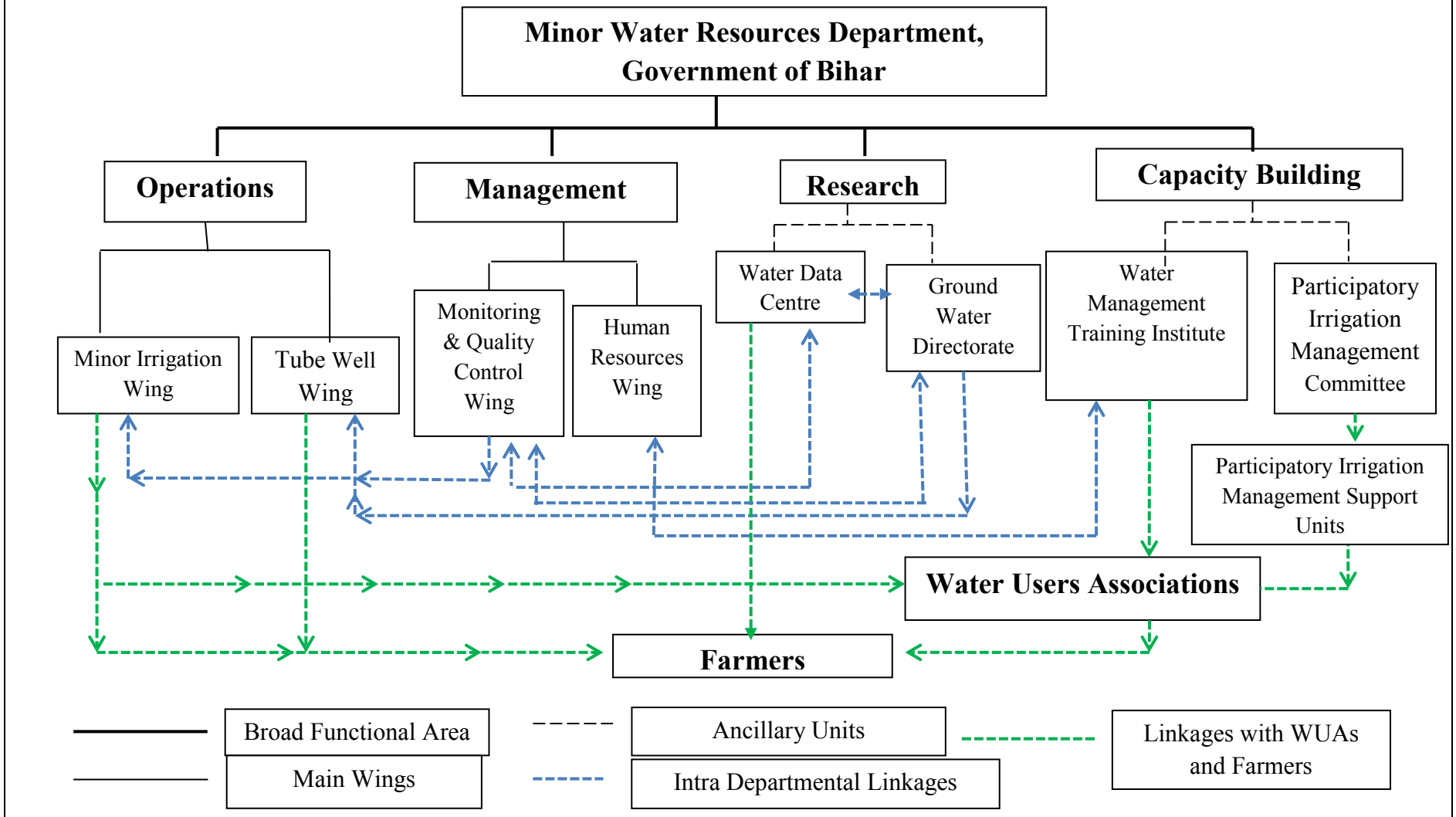
Recommendation 7.1: Establish a dedicated Monitoring and Quality Control Wing (M&QC)
Recommendation 7.2: Create a Water Data Centre
Recommendation 7.3: Pay attention to infrastructure and instrument requirements

Participatory Irrigation Management: Strengthening WUAs; Developing a Service Ethic (section VIII)

Recommendation 8.1: Create a Participatory Irrigation Management Committee and WUA Support Units
Recommendation 8.2: Give incentives for WUAs to register
Recommendation 8.3: Separate governance and management of the WUA
Recommendation 8.4: Allow WUAs to set and collect the service fee
Recommendation 8.5: Grant each WUA an entitlement to water
Recommendation 8.6: Increased awareness and training
Recommendation 8.7: Change attitude and role of the MWRD

This report is unique and, should the recommendations be adopted by MWRD, Bihar, could set a benchmark for consultative irrigation and water management reform in other states as well. Conducted as a "rapid response" to the Government of Bihar's request, the study has revealed further areas of research, namely detailed budgetary analysis of staffing recommendations, inquiry into alternative sources of finance for MWRD's activities, scope for alternative energy sources for minor irrigation, and the pathways for more integrated and coordinate governance between the MWRD and other relevant departments in Bihar. IGC and CEEW are grateful to the MWRD, Bihar for facilitating this research and the close engagement of the senior members of the Department throughout the course of this study. We welcome the opportunity to support the Government of Bihar with further innovative research and offer the evidence base for sustaining its remarkable growth trajectory in the coming years.

Recommended Structure of Minor Water Resources Department



Source: Authors

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