



## Impact of Irrigation on Food Security in Bangladesh for the Past Three Decades

PDF (Size: 569KB) PP. 216-225 DOI : 10.4236/jwarp.2009.13027

### Author(s)

M. Wakilur RAHMAN, Lovely PARVIN

### ABSTRACT

Bangladesh has made impressive progress in agriculture sector in the last three decades and has almost become self-sufficient in food grain production. This is a tremendous achievement owing to its small territory and huge population and this was achieved through agricultural mechanization and modernization. Irrigation is one of the leading inputs has direct influence to increase yield, food grains production and plays vital role for ensuring food security in Bangladesh. The present study examined the growth of irrigated area and its impact on food grain production during last three decades. Time series data were used for the study. Different statistical methods such as mean, percentage, linear and exponential growth model were applied for getting meaningful findings. Various technologies have been used for irrigating crops which have contributed to rapid expansion of irrigated area. The conventional irrigation methods (Low Lift Pump, Dhona, Swing Bas-ket, Treadle Pump etc.) were replaced by modern methods (i.e Deep Tube Well and Shallow Tube Well). In addition, surface water irrigation also sharply declined, losing its importance due to lack of new surface irrigation project and the ineffectiveness of earlier project. Groundwater covered 77 percent of total irrigated area and major (62%) extractions occurred through Shallow Tube Wells (STWs). The rapid expansion of ground water irrigation in respect to STWs irrigation was due to government's withdrawal on restrictions on tube well setting rule, encouraging private sector and the cost effectiveness of Chinese engine which have been affordable to the small and medium farmers. Irrigated area thus, increased by about three times and cropping intensity also increased from 154 to 176 percent. Boro rice, an irrigated crop, consumed 73 percent of the total crop irrigation and contributed to a greater extent in total rice production in Bangladesh. Boro rice alone contributed to 55 percent of total food grain and was also highest (3.44 MT per hectare) compared to aus rice (1.66 MT per hectare) and aman rice (1.99 MT per hectare) per unit production. Consequently, the cultivated area of boro rice increased by 1168 to 4068 thousand hectares. The higher productivity of boro rice has almost helped the nation to meet her food requirements (about 24 Million MT). Boro rice production was highly correlated ( $r = .978$ ) with irrigated area. Expansion of one hectare of irrigated area added 3.22 MT of boro rice in Bangladesh. Finally, the study suggested for expansion of irrigated areas (ground water and surface water), adoption of modern technologies and formulation of farmers' friendly policy.

### KEYWORDS

Irrigation, Food Security, Boro Rice and food Grain Production

### Cite this paper

M. RAHMAN and L. PARVIN, "Impact of Irrigation on Food Security in Bangladesh for the Past Three Decades," *Journal of Water Resource and Protection*, Vol. 1 No. 3, 2009, pp. 216-225. doi: 10.4236/jwarp.2009.13027.

### References

- [1] [1] M. S. Alam, M. R. Islam, M. A. Jabber, M. S. Islam and M. A. Salam, " Institutional backup towards food security in Bangladesh," In Proceedings BKAS 13th National Conference and Seminar on Climate Changes: Food Security in Bangladesh, Vol. 13, Dhaka, Bangladesh PP, August 2008.
- [2] [2] R. K. Talukder, " Food security in Bangladesh: National and global perspectives," In Proceedings BKAS 13th National Conference and Seminar on Climate Changes: Food Security in Bangladesh, Vol. 13, Dhaka, Bangladesh PP, August 2008.

- [Open Special Issues](#)
- [Published Special Issues](#)
- [Special Issues Guideline](#)

[JWARP Subscription](#)
[Most popular papers in JWARP](#)
[About JWARP News](#)
[Frequently Asked Questions](#)
[Recommend to Peers](#)
[Recommend to Library](#)
[Contact Us](#)

Downloads:	402,262
Visits:	1,011,010

Sponsors, Associates, and  
 Links >>

- [3] [3] M. Z. Huda, " Regional development of irrigation technologies and its impact on food grain production in Bangladesh," MS Thesis, Department of Agricultural Economics, BAU Mymensingh, Bangladesh, 2001.
- [4] [4] Bangladesh Economic Review (BER), Bangladesh Economic Survey, 2005, Finance Division, Ministry of Finance, Government of Bangladesh, Dhaka, Bangladesh, 2007.
- [5] [5] Bangladesh Bureau of Statistics, Statistical Year, Book of Bangladesh, Bangladesh Bureau of Statistics, Statistics Division, Ministry of planning, Government of People's Republic of Bangladesh, Dhaka, 2008. ([http://www.bbs.gov.bd/agriculture\\_wing/annual\\_agri\\_stat.pdf](http://www.bbs.gov.bd/agriculture_wing/annual_agri_stat.pdf))
- [6] [6] T. Ernest, " Water profile of Bangladesh," In: Encyclopedia of Earth. Eds. Cutler J. Cleveland (Washington, D. C.: Environmental Information Coalition, National Council for Science and the Environment), FAO, 2007.
- [7] [7] M. W. Rahman and R. Ahmed, " Shallow tube well irrigation business in Bangladesh," Paper Presented at Summary and Synthesis Workshop at Kathmandu, Nepal, March 20– 24, 2008.
- [8] [8] Bangladesh Bureau of Statistics, " Statistical year book of Bangladesh," Bangladesh Bureau of Statistics, Statistics Division, Ministry of planning, Government of People's Republic of Bangladesh, Dhaka, 2007.
- [9] [9] Bangladesh Economic Review, Bangladesh Economic Survey, 2005, Finance Division, Ministry of Finance, Government of Bangladesh, Dhaka, Bangladesh, 2006.
- [10] [10] A. Zahid and S. R. U. Ahmed, " Groundwater resources development in Bangladesh: Contribution to irrigation for food security and constraints to sustainability," Groundwater Governance in Asia Series-1, pp. 25– 46, 2006.
- [11] [11] R. P. Jones, " Irrigation service market in Bangladesh: Private provision of local public goods and community regulation," Paper Presented in Workshop on Managing Common Resources at the Department of Sociology, Lund University, Sweden, 2001.
- [12] [12] M.A.S Mandal Ed " Dynamics of Irrigation Market in Bangladesh, Changing Rural Economy of Bangladesh. Bangladesh Economic Association, Dhaka, 2000.
- [13] [13] Fifth Five Year Plan " Mid- term review of the Fifth Five Year Plan 1997-2002" , Planning Commission, Ministry of Planning, Government of Bangladesh, Dhaka, Bangladesh, 2000.
- [14] [14] S. Islam and A.N M.R Karim Ed, " Increasing Rice Production in Bangladesh: Challenges and Strategies" International Rice research Institute, Los Banos, 1999.
- [15] [15] M. K. Mondal, T.P Tuong, S.P Ritu, M.H.K Chowdhury, A. M Chasi, P.K Majumder, M.M Islam and S.K Adhikary " Coastal water resource use for higher productivity; Participatory research for increasing cropping intensity in Bangladesh" Paper presented in the international conference on