Bangladesh Integrated Water Resources Assessment

Enhancing Bangladesh's capacity to provide policy and management options for the equitable and efficient allocation and use of water into the future.

The issue

Climate change, increasing population and economic growth are expected to increase the demand for water resources in Bangladesh. The quality and quantity of Bangladesh's surface water and ground water resources may be negatively affected with a risk of reduced access to safe drinking and irrigation water, and of induced contamination of ground water by saline intrusion and ingress of polluted surface waters.

Key lessons for development

- Food security is achievable, though there will be challenges.
- Water is crucial to food security but land may be more limiting in the future.
- Ground water use is unsustainable in some areas.
- Climate change is a key concern, and for many water-related issues, coping with climate variability is likely to enable coping with climate change.
- Economic development overall is unlikely to be much affected by water-related climate change but the structure of the economy may well be.
- Poverty reduction policy should be directed towards accelerating growth in non-agricultural activities and education, as these are likely to yield the greatest improvements to household income.

What did the project deliver?

The provision of **advice for future National Water Policy** including information on the ground water sustainability issue, as well as enabling better use of river modelling for the dry season. The assessment examined water resources from both biophysical and socio-economic perspectives and exposed several key issues and knowledge gaps, including the fact that sustainable levels of ground water use are generally not known. The project also highlighted the assertion that food security is, in fact, achievable, in spite of the challenges of reduced land available for agriculture and a projected increase in flooding and salinity intrusion.

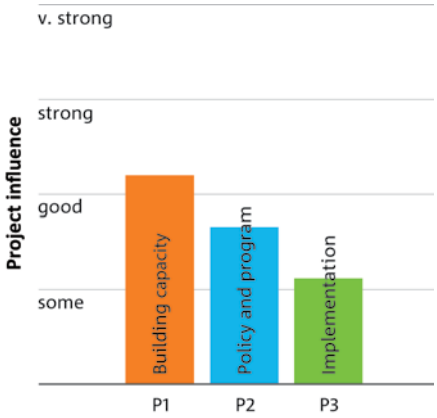
The **publication of journal papers and reports** with multiple in-country partner papers, journal papers, two conference papers and a final 'big messages' report, which was presented at a workshop in Bangladesh, attended by the Minister for Water Resources.

Skills were strengthened with the project building capacity of Bangladeshi organisations in integrated water resources assessment. This included the assessment of socio-economic impacts of climate change and future water demand due to population growth.

Project evaluation and impact

In April 2014, CSIRO undertook an evaluation to assess the project's influence on participants' adaptive capacity. The project consisted of three linked phases to identify where impact had been achieved. Phase 1 focused on 'building planning capacity and tools'. This enabled Phase 2 'policy and program development', which was followed by Phase 3 'implementation, adoption and scaling out'. Phase 1 encompassed the project's activities, while Phases 2 and 3 were out of the project team's direct control. Parts of Phase 2 and all of Phase 3 'impact with beneficiaries' extend beyond the life of the individual projects and are dependent on key stakeholder support over time.

The results showed that both the participatory approach and training have significantly built the capacity of the research teams. Overall, the project improved the trust and social networks between individuals and institutions; predominately, the participation by IWM, BIDS, CEGIS and CSIRO. Individuals appreciated the training and the opportunity to exchange information, particularly around international collaboration, data management, and integrated thinking. This has subsequently led to the development of new ideas and concepts. These skills and the project's participatory planning process have influenced the in-country research teams to continue this work and to apply their new skills in subsequent projects in Phase 2, resulting in new cross-scale linkages in Phase 3.



Summary evaluation results for the three phases of the project impact pathway

An interesting aspect of this work included the transfer of skills regarding the use of existing data in new ways, for example using remote sensing satellite data for the estimation of evapotranspiration. While this work is common for Australia and CSIRO, it serves to demonstrate the importance of collaborative research with a capacity building element. In-country teams are keen to explore how this technology / data can be used in other sectors such as soil, water and climate analysis and yield forecasting. It is expected that the Water Resources Planning Organisation (WARPO) will incorporate the project outputs in their revision of the National Water Management Plan.

Project partners

This two year collaborative project was led by CSIRO, partnering with the Bangladesh Water Development Board (BWDB), Water Resources Planning Organisation (WARPO), Institute of Water Modelling (IWM), Bangladesh Institute of Development Studies (BIDS), Centre for Environmental and Geographic Information Service (CEGIS), and the Australian Department of Foreign Affairs and Trade (DFAT).

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