SDIP Phase 2: CSIRO's 2019-20 (year 4) statement

This summary outlines CSIRO's achievements and sustainable change as part of the Sustainable Development Investment Portfolio (SDIP) in 2019–20.

The COVID-19 pandemic has brought the importance of integrated water resources management (IWRM) into sharp relief, with millions of people across Pakistan, Bangladesh, Nepal and Afghanistan lacking secure and reliable access to clean water for sanitation, and increased pressure on rural water supplies as workers returned home from the cities and overseas.

CSIRO's research highlighted important lessons to consider while responding to COVID-19-related water security and water supply challenges: key for response and recovery is efficient water supply to households for sanitation and agriculture to absorb workforce returning from overseas or cities.

Data and information on how much surface and groundwater is available, where and when will play a vital supporting role.

On a project delivery level, despite the disruptions brought by COVID-19, CSIRO delivered most of its planned outcomes and milestones related to the SDIP goals to: strengthen water management practices and capacity, generate critical new knowledge for use in decision-making, and contribute to an enabling environment through policy influence.

The outcomes affirmed Australia's standing as a leading science and technology partner on sustainable water management in South Asia; and further supported and informed high-level engagement between Australia and the governments of Pakistan, Bangladesh, Nepal and Afghanistan.


Kamala River, Nepal, photo credit: Ram Devi Tachamo Shah


Women harvesting rice, Bangladesh, photo credit: Pixabay

Pakistan

In Pakistan, CSIRO's work has aimed to provide tools, knowledge products and associated capacity building to support national and provincial water planning and policy development.

This year's achievements have exceeded expectations through institutionalisation and use of tools and processes by government partners, such as the endorsement of the Water Apportionment Accord (WAA) tool by the Ministry of Water Resources (MoWR), and its use to calculate 2020 Kharif water allocations in Punjab, Sindh, Balochistan and Khyber Pakhtunkhwa provinces.

The water data management product, HYDSTRA, was successfully used by the Water and Power Development Authority–Surface Water Hydrology Project (WAPDA–SWHP) to publish annual discharge reports, and process 2019 climate data, demonstrating the utility of, and in-country capacity and confidence in, the centralised data system.

The team also contributed to critical new knowledge, with the use of tools and datasets developed as part of CSIRO's work in Indus providing a more detailed understanding of potential impacts of climate change and reservoir sedimentation on future water supply and demand, which will support long-term water resource planning.

This year has also seen the successful defence of three master's theses that have highlighted women's contribution to agricultural production in Punjab rice-wheat systems.

Indus team working with end users, photo credit: Mobin Ahmad

Women working in field, photo credit: UAF

Bangladesh

In Bangladesh, CSIRO aimed to inform government policy for sustainable groundwater use in northwest Bangladesh by providing new evidence on use and water balance dynamics.

First, working closely with in-country partners, the team provided new evidence of the extent and drivers of groundwater decline, and recommendations for policy change to ensure sustainable groundwater management (such as increasing water recharge and storage, changing crop patterns), in addition to the prevailing pumping restrictions.

Groundwater irrigation, photo credit: Mohammed Mainuddin

Second, the work has also contributed new insights into male-female contributions in farming households to inform more gender-aware and gender-sensitive future policy interventions.

Researcher interviewing for data collection, photo credit: BAU

Third, three key Bangladesh government agencies have expanded their research skills, positioning them as trusted knowledge providers for water and agricultural policies.

Fourth, CSIRO enabled a "whole-of-government" approach to groundwater management through facilitating the sharing of information and discussion between local research partners and key government decision-makers.

Nepal

In Nepal, CSIRO's work has focused on increasing the government's capacity in participatory basin planning through the Kamala Basin Initiative.

Despite re-planning of stakeholder workshops due to COVID-19, the team produced critical new knowledge and capacity to support improving water management in the Kamala Basin, with the drafting of the *Water Resources Development Strategy for the Kamala River Basin*.

The Strategy outlines actions and proposals for more equitable distribution of, and access to, water resources under current and future development scenarios and climatic conditions.

The draft Strategy is the result of community and stakeholder engagement, and new knowledge generated by the initiative and its partners (e.g. *The State of the Kamala Basin* report, approved by the Nepal-Australia Joint Advisory Committee (JAC) this year; new datasets; detailed analysis of water resources supply and demands; institutional arrangements for improved water management; review of water-related policies to understand women's participation in water management; and reporting on the ecological health of the Kamala Basin).

The process of co-developing the Kamala Strategy has contributed to further skills in Nepal and in Australia, creating understanding and confidence in participatory basin management in the government and key partners for integrating community concerns in a meaningful way and translating these to practical actions.

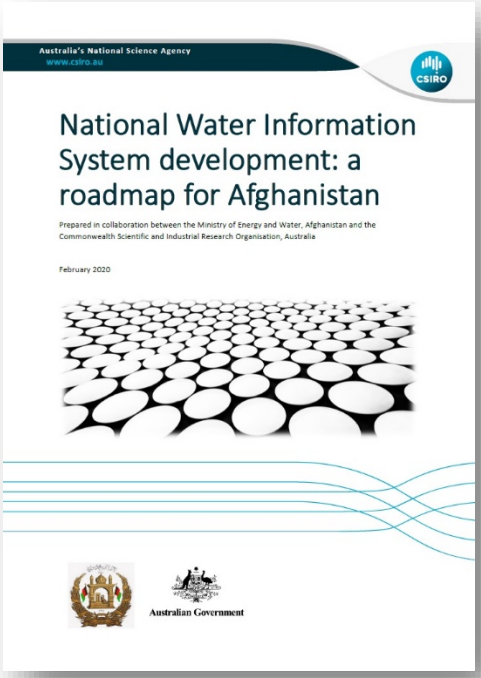
This process has been supported by the JAC which has continued to provide an important point of formal review and endorsement of the Kamala Basin Initiative.

Kamala River, Nepal, photo credit: Tanya Doody

Afghanistan

CSIRO's work in Afghanistan aimed to improve water information systems to enable the government's national water reform agenda.

This year has seen the publication of a *National Water Information System roadmap for Afghanistan*. The roadmap defines steps to build capability, governance arrangements and other requirements.



CSIRO's close collaboration and engagement with key government officials, high-level planners, donors and national forums on the development and promotion of the roadmap has ensured buy-in for implementation (for which planning is now under way). CSIRO's collaboration with eWater has supported this longer-term journey through building skills and confidence in scenario-based basin planning, supporting a team from the National Water Affairs Regulation Authority (NWARA) to develop a prototype model of the Kabul river system, and providing an analysis of development scenarios to the Afghanistan government.

Women at Katari Bridge, photo credit: Emily Barbour

Gender

In addition to supporting capacity in partner countries to conduct gender-aware research, CSIRO has continued its institutional strengthening in integrating gender considerations into research.

This year has seen the publication of an approach to integrating gender perspectives in water modelling in a respected journal.

This has been an important achievement to raise awareness and skills across the broader IWRM community. Other activities this year included the development and testing of training modules on gender in water modelling.

CSIRO plans to use the modules to train water managers of the future (e.g. Master of Science course in Kabul Polytechnique University).

Collecting data through interviews, photo credit: BAU

Collecting data through interviews, photo credit: BAU

Sustainable change

Across CSIRO's SDIP program, there is evidence of sustainable change in partner countries.

In Pakistan, the adoption of the WAA tool and commitment to strengthening a centralised data management system signals a marked shift in the federal and provincial governments' water resources planning practices. The government is also exploring how to integrate climate change considerations into water planning and management, evidenced by their request for information on the impact of climate change and reservoir sedimentation on future water supply and demand, and engagement in piloting how to incorporate improved climate risk understanding into the WAA tool.

In Nepal, CSIRO's close engagement with the government in the development of *State of the Basin Report* and the *Kamala River Basin Water Resources Development Strategy* has positioned these documents to influence the country's approach to water resources management.

In Bangladesh, the integration and strengthening of water resources and agricultural research and knowledge across key research institutions are critical for evidence-based integrated water management. The Bangladesh Agricultural Research Institute (BARI), Bangladesh Agricultural University (BAU), and Institute of Water Modelling (IWM) are proactively collaborating and jointly carrying out reliable assessments of surface and groundwater resources and cropping systems, and have extended their engagement with key government decision-makers.

In Afghanistan, CSIRO has laid a solid foundation for water information system development.

More information on CSIRO's SDIP activities, including publications, can be found at http://research.csiro.au/sdip

A key outcome for CSIRO has been the strength of partnerships that have been developed over the project, with partner institutions emphasising the value of the collaborations and a desire to continue to build on this work. CSIRO, with partner institutions, are exploring ways to build on, and embed this work going forward.

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