

# **The Sustainable Development Investment Portfolio (SDIP)**

## **Annual Report 2017-18**

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## Acronyms

ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
AHC	Australian High Commission
APSIM	Agricultural Production Systems Simulator
AQC	Aid Quality Check
BARI	Bangladesh Agricultural Research Institute
BAU	Bangladesh Agricultural University
BBIN	Bangladesh-Bhutan-India-Nepal
BUET	Bangladesh University of Engineering and Technology
CASI	Conservation Agriculture based System Intensification
CBFEWS	Community-Based Flood Early Warning Systems
CIMMYT	International Maize and Wheat Improvement Centre
CSO	Civil Society Organisation
CWC	Central Water Commission (India)
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DFAT	Department of Foreign Affairs and Trade
DHM	Department of Hydrology and Meteorology (Nepal)
DMD	Disaster Management Department (Bihar)
DRR	Disaster Risk Reduction
EGP	Eastern Gangetic Plains
EIA	Environmental Impact Assessment
GEWE	Gender Equality and Women's Empowerment
GLOF	Glacial Lake Outburst Flood
GMRC	Division of Glacier Monitoring and Research Centre, WAPDA (Pakistan)
HDWG	Hydropower Developer's Working Group (Pakistan)
HIMAP	Himalayan Monitoring and Assessment Programme
HKH	Hindu Kush Himalaya
IBIS	Indus Basin Irrigation System
ICE WaRM	International Centre of Excellence in Water Resource Management
ICIMOD	International Centre for Integrated Mountain Development
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
IPCC	Intergovernmental Panel on Climate Change
IRSA	Indus River System Authority
IRSM	Indus River System Model
IWRM	Integrated Water Resource Management
MoWP	Ministry of Water and Power (Pakistan)
MoWR	Ministry of Water Resources, River Development and Ganga Rejuvenation (India)
RD&GR	
MoWR	Ministry of Water Resources (Pakistan)
NGO	Non-Government Organisation

NHP	National Hydrology Project (India)
NWP	National Water Policy
PaCT	Partnership for Cleaner Textiles
PAF	Performance Assessment Framework
PEA	Political Economy Analysis
PID	Punjab Irrigation Department (Pakistan)
PPA	Power Purchase Agreement
PPP	Public Private Partnership
SAWI	South Asia Water Initiative of the World Bank
SDG	Sustainable Development Goal
SDIP	Sustainable Development Investment Portfolio
SPIP	Solar Powered Irrigation Pumps
SRFSI	Sustainable and Resilient Farming Systems Intensification
SWaRMA	Strengthening Water Resource Management in Afghanistan
TAF	The Asia Foundation
UAF	University of Agriculture Faisalabad
UIB	Upper Indus Basin
WAPDA	Water and Power Development Authority (Pakistan)
WECS	Water and Energy Commission Secretariat (Nepal)
WRD	Water Resources Department (Bihar)

# SDIP snapshot

## Context

**Australia's Foreign Policy White Paper (2017) recognises that a key risk to prosperity and stability is growing water-energy-food insecurity, compounded by the impacts of climate change. South Asia is a region at risk.** With finite land, intensifying water scarcity and climate change impacts, countries in South Asia are under pressure to manage the competing demands for water, energy and food. All need water, land and energy to produce enough food for a burgeoning population; and water and land to serve the growing energy needs of an increasingly urbanised and industrially developed region. 400 million people in South Asia currently have no access to electricity and given the population and economic growth trajectory of the region, energy consumption is projected to double and electricity demand triple by 2040. This will not be met without the significant re-deployment of water and arable land.

**Water, energy and food are inextricably linked, and policy and management decisions in one sector have a direct impact on the others.** In South Asia, Australia has been working with partner governments and key actors in the private sector and civil society by engaging at the intersection of water, energy and food systems. This approach recognises that traditional sectoral/siloed approaches are failing to address the growing and competing pressures.

**Australia engages based on its niche expertise and at the point of greatest opportunity.** This includes large-scale renewables (solar), energy access and resource efficiency in India; integrated water resource management (IWRM), hydro and resource efficiency in Pakistan and Nepal; IWRM and resource efficiency in Bangladesh; and climate resilient agriculture across the Eastern Gangetic Plains of India, Nepal and Bangladesh. These entry points are underpinned by a more integrated-systems understanding of the inter-linkages between water, energy and food – and the knowledge that addressing this complex set of insecurities/instabilities will take a number of different entry points, operating at different scales.

**In South Asia, given the persistent gender and social exclusion from decision-making regarding the allocation of resources, a more integrated systems approach also needs to have gender and social inclusions issues at its core.** Women's economic empowerment is fundamental to development in South Asia. In tackling water, energy and food insecurity in a more integrated way, women's and men's perspectives, women's and men's voices and women's and men's participation in decision-making, and the systemic barriers to their engagement, must be considered.

## Program overview

**The Australian Aid Program, through the Sustainable Development Investment Portfolio (SDIP), is supporting seven partners from Australia and South Asia<sup>1</sup> to promote a more integrated (nexus) approach to managing water, food and energy resources in South Asia, especially addressing climate risks and the interests of women and girls.** The geographic focus of SDIP is the area broadly bounded by the Indus, Ganges and Brahmaputra river basins, as these areas are the most vulnerable to the impacts of rapid industrialisation, urbanisation, high population growth and the impacts of climate change. Moreover, these basins are highly vulnerable to resource conflict, shared as they are by several countries of the region.

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<sup>1</sup> ACIAR; CSIRO; World Bank; International Finance Corporation (IFC); The Asia Foundation (TAF); the International Centre of Excellence in Water Resources Management (ICE WaRM); and ICIMOD, in Afghanistan, Bangladesh, Bhutan, India, Nepal, and Pakistan

**SDIP commenced in 2012 and is designed as a 12-year, three phase investment.** Each phase provides an opportunity for DFAT to tighten the focus for impact and, where necessary, to recalibrate the mix of investments and the geography of the investments.

SDIP operates as a "**portfolio**" under which partners are given earmarked core funding to select activities in their specific areas of expertise, aligned with strict investment criteria, to progress the goal of SDIP. The portfolio approach is complemented by a focus on genuine "**partnerships**", including a commitment between DFAT and SDIP partners to a relationship characterised by equity and openness and an acknowledgement of mutual benefit. This type of partnership moves away from a more traditional contractor–service provider model, which can lead to entrenched power imbalances, stifling openness, risk sharing, learning opportunities and innovation. Partnership provides a significant risk mitigation strategy when working in complex environments where the issues and the opportunities are fluid and the more effective models are ones that build in flexibility for partners to move to the points of change/opportunity in the system. A genuine partnership with a "no surprises" approach ensures decisions and direction are discussed and mutually agreed with minimal contractual overheads.

**Funds are primarily drawn from the South Asia Regional Development Program but are complemented by funding from the South Asia bilateral programs who recognise the value of the program to partner governments (Nepal, Pakistan and Afghanistan).** Effort is, and continues to be, an integrated one, drawing on both the development and diplomatic efforts of Australia. DFAT plays a catalytic/brokering role across the portfolio, identifying and facilitating opportunities across partners and the region for synergy and greater collaboration in service of SDIP and Australia's goals in the region.

**The key entry points for Australia's engagement and influence through the SDIP are:**

- Convening dialogue between different sectors/perspectives from business, government, science, academia and civil society both across national and sub national boundaries to build trust and promote cooperation on water-energy-food issues;
- Fostering systems science thinking, tools, research and analysis that can support evidence-based decision-making in the trade-off between competing demands for water-energy-food resources now and under future climate change contexts;
- Capacity building and institutional engagement to support more cooperative and integrated approaches to resource management;
- Shaping enabling behavioural, regulatory and policy reforms to ensure greater sustainability;
- Diplomatic efforts from Australia's Posts in the region augment and amplify the above.

#### **SDIP highlights from 2017-18**

**Australia's financial contribution is modest, but it has become a valued actor in the water-energy-food space in South Asia.** The long-term relationships developed between SDIP partners and national and sub-national institutions in South Asia, and the engagement of Posts (to elevate issues in Government to Government settings) has been a critical part of success over six years. Australia's partners have over the years established relationships and built a level of trust, critical to operating in South Asia, that gives Australia access to key government agencies and an ability to influence national and sub-national approaches to resource management. Highlights include:

1. Australia's support to India to progress its targets for renewable energy generation. Australia was the sole funder of **a new financing model (developed by IFC) that mobilised USD 576**

**million of private investment for the world's largest grid-connected solar power facility in India.** It marked the first time that the price of solar was cheaper than coal. When fully operational, the 750 MW Rewa Ultra Mega Solar project will reduce greenhouse gas emissions by approximately 1 million tonnes per year. It will also use significantly less water relative to the same amount of generation from coal plants. Three new projects totalling 1500 MW are in train and the Solar Energy Corporation of India is planning a national roll out of the model. It categorically shifts the goalposts on cost effective renewable energy generation in India relative to fossil fuel based thermal power (coal, gas and oil).

2. Australia's partners continue to deliver substantive climate change related benefits:
  - ACIAR is helping **advance climate change adaptation and mitigation strategies in the agricultural sector**, with Conservation Agriculture-based System Intensification (CASI) approaches found to improve the productivity and profitability of farming systems in the Eastern Gangetic Plain for over 75,000 farmers whilst also increasing carbon storage in soils and reducing the amount of water, fuel, labour and greenhouse gas emissions per crop (rice, maize and lentils) relative to conventional farming practices. In 2017-18, 4,651 hectares of additional land was converted to CASI-based farming systems benefiting a total of 17,982 farmers (3,984 women).
  - IFC is helping **save 21.5 million cubic metres of water and 2.5 million MWh of power per year** through its emerging resource efficiency program (Pakistan, Bangladesh, Nepal and India) designed to reduce water demand, use power more efficiently and thereby avoid greenhouse gas emissions. In a region grappling with water and energy insecurity coupled with climate change, the direct link between increasing resource efficiency and water-energy security should not be underestimated. Every drop of water not used and every kw/h of energy avoided means more is available for other end-uses in a region of burgeoning water and energy demand.
  - IFC's 'Lighting Asia' program, gave **an additional 5.3 million people in India access to affordable off-grid solar energy lanterns in 2017-18**, taking the cumulative total for SDIP to 18 million people and reducing greenhouse gas emissions by over 100,000 tonnes. An evaluation of the program found that solar lanterns had a significant positive impact on educational and economic parameters among beneficiary households, and that there was a significant decline in the number of households using kerosene as the primary source of fuel for lighting.
3. Through its support for ICIMOD, Australia contributed to the **first ever baseline assessment of the state of the Hindu Kush Himalaya (HKH).**<sup>2</sup> The HKH Assessment provides evidence that global temperatures of 1.5 degrees by the end of the century will result in a 36 per cent reduction in glaciers, and 2 degrees will result in a 49 per cent reduction – irrevocably compromising the water, energy and food security of the 1.9 billion people living in its major river basins – one quarter of humanity. This report, launched in February 2019 to global acclaim, makes the case for immediate and concerted global action. Australia's Posts in the region are in the process of mobilising support through hosting awareness raising events with the national and international communities in their purview.
4. **Australia's partners CSIRO and ICE WaRM have been instrumental in leading the engagement with key agencies in Pakistan and Nepal on improved water resource management.** This engagement has laid the foundation for a transition to Government to

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<sup>2</sup> Countries in the HKH region are: Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal and Pakistan.

Government relationships that are reflected in MOUs, both of which reference the link between water, energy and food, and the importance of considering gender and climate change. This pattern is being repeated in Bangladesh wherein a Letter of Intent is being prepared for signature between CSIRO and the Water Resource Planning Organisation (WARPO). This is a key stepping stone to a potential Government to Government MOU.

- The Indus River System Model, developed by CSIRO in collaboration with central and provincial governments in Pakistan, has been endorsed by the SDIP Strategic Advisory Group (which includes several different Government of Pakistan Ministries) as a potential common water modelling framework for the Indus Basin. This provides for a real break-through in the way in which Pakistan addresses its water management challenges. To date, the securitisation and politicisation of water has meant there has been little to no data sharing between provinces. This, coupled with the recently launched Pakistan National Water Policy (for which Australia can also claim some influence), provides essential building blocks for intra national resource sharing. This is critical for Pakistan's growth agenda.

**5. Gender equality and women's empowerment being actively considered and promoted by all SDIP partners, with considerable progress relative to the difficult context.**

- Nepal's National Water Policy specifically refers to the importance of including gender and social inclusion, which is an issue that Australian partners (CSIRO and ICE WaRM) have been promoting with the Government of Nepal over six years;
- Gender is increasingly being incorporated into regional forums and policy dialogue, such as the most recent Brahmaputra Dialogue (SAWI) and the Resilient Hindu Kush Himalaya Regional Forum (ICIMOD), which both included dedicated gender sessions for the first time;
- Technical training on gender equity is also being made available for water managers in the region, including through a short course on gender equity delivered by TERI School of Advanced Studies in India with support from ICE WaRM;
- ACIAR, has specifically targeted women farmers and designed gender sensitive approaches and training in their roll out of climate resilient agriculture; and
- IFC uses a targeted approach to attract women micro entrepreneurs for the sale of off grid solar lanterns/small household appliances. 12,000 entrepreneurs have been engaged and trained to date (and growing) and 60 per cent are women.

**6. Australia's partners support for multi-stakeholder regional and national dialogues, such as the Upper Indus Basin Network Dialogue (facilitated by ICIMOD) for the four countries who share the upper Indus and the Brahmaputra Dialogue (facilitated by SAWI) for the three countries who share that river basin. TAF co-hosted the South Asia Power Summit in December 2017, an annual platform created to discuss the most pressing issues facing India's power sector. It was attended by 100 of India's largest power sector companies/financiers and addressed by HOM New Delhi. These events, which draw in significant actors from the across the region and the public and private sectors and civil society, help shape a more integrated discourse. Australia not only contributes through funding but also through shaping agendas and the provision of speakers and panellists, profiling Australia's support for the issues and the region.**

**7. Australia's partners participating in and promoting localised examples of regional cooperation.** ACIAR, with their twenty regional partners, have supported knowledge and practice transfer and cooperation in climate resilient agricultural methodologies across Eastern Nepal, Bangladesh and West Bengal, who all share the Eastern Gangetic Plain. ICIMOD and SAWI have established that flood forecasting and disaster risk reduction strategies



provide mechanisms for encouraging regional cooperation at the local level, for example, ICIMOD's work in community-based flood early warning systems across the Nepal-Bihar border has been shown to save lives and protect livelihoods. The drivers of climate change and mutual benefit/support in the face of increasing natural disasters are galvanising new levels of cooperation and this is being optimised by Australia's partners.

# 1. Introduction

## Development Context<sup>3</sup>

**South Asia has a growing population of nearly 1.7 billion and is home to more than 40 per cent of the world's poor.<sup>4</sup>** With limited land and water resources, countries in the region are under immense pressure to produce sufficient food and energy to meet the demands of an increasingly urbanised and industrially developed population, as **nearly 51 per cent of South Asia's population is food and electricity deficient.<sup>5</sup>** Water remains at the core of urbanisation, food production, and energy generation, yet, **South Asia faces an intensifying water crisis.** The region supports more than 21 per cent of the world's population, but has access to just over eight per cent of global water resources<sup>6</sup>.

**The Hindu Kush Himalaya or the “Third Pole” serve as the headwaters of three major transboundary river systems—the Indus, Ganges, and Brahmaputra – and is central to water, food, and energy security in the region.** Conceptual frameworks on natural resource management have evolved to embrace the idea that **water, food, and energy are inextricably linked, with policy decisions and management approaches in one sector having a direct impact on the others** (ie food production requires water and energy, energy production requires water). This is now commonly **referred to as the water-energy-food nexus.** However, key institutions in the region have not, generally, recognised the inter-linked nature of these resources and, historically, there has been little evidence of cooperation within and across borders.

**Overlaying the current challenges associated with water, energy and food security in South Asia are the impacts of a changing climate.** The HKH Assessment is a seminal report which includes scientific evidence that 36 per cent of the glaciers in the Hindu Kush Himalaya are forecast to disappear by 2100, even if global warming is limited to 1.5 degrees Celsius. If global temperatures increase by 2 degrees Celsius this figure rises to 49 per cent of glaciers. This has critical implications for the estimated 240 million people who live in the Hindu Kush Himalaya and the estimated 1.65 billion people downstream who rely on these rivers for their social and economic wellbeing. Climate change is also expected to lead to more extreme weather events, changes in average precipitation and temperature regime (adversely impacting agricultural production), and a more unpredictable monsoon. These changes will have implications for water, food and energy security, and natural ecosystems.

Furthermore, **women have inadequate access, control and voice and agency in relation to water management, including in the design and training of new technologies and policies<sup>7</sup>.** In South Asia women and girls are most often the primary users, providers and managers of water in their households and are responsible for health, hygiene and sanitation. While water-related disasters such as floods have a disproportionate impact on women and girls, there is a need to move from considering gender equality as a ‘downstream’ issue (do no harm), to an upstream issue where activity proactively considers benefitting women – including allowing women to participate in policy dialogue, along with practical actions that improve their lives, their households and their communities. South

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<sup>3</sup> This section is largely sourced from analysis completed by The Asia Foundation in 2017.

<sup>4</sup> According to 2015 World Bank estimates. <http://www.worldbank.org/en/region/sar/overview#1>

<sup>5</sup> Ahmed, A.U. et al, Hill, R.V., Smith, L.C., Weismann, D.M., Frankenberger, T., Gulati, K., Quabili, W., Yohannes, Y., 2007. The World's Most Deprived: Characteristics and Causes of Extreme Poverty and Hunger. IFPRI, Washington, DC. Cited in Rasul 2014, p. 36

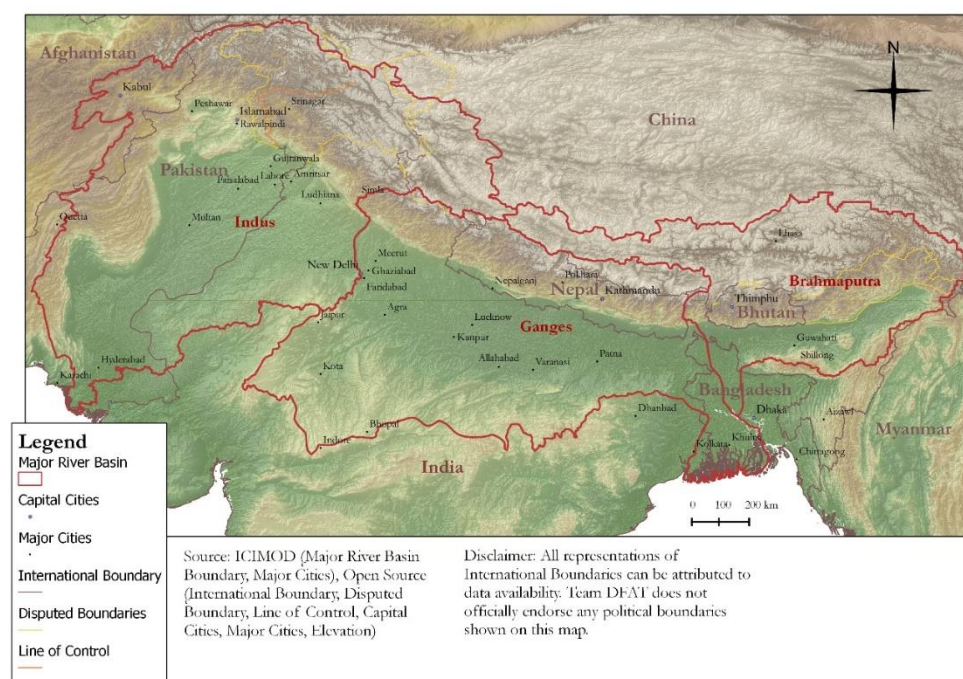
<sup>6</sup> Babel, M.S. and Wahid, S.M. 2008. *Freshwater Under Threat in South Asia: Vulnerability Assessment of Freshwater Resources to Environmental Change*. Nairobi, Kenya: United Nations Environment Programme and Asian Institute of Technology.

<sup>7</sup> Zwartveen, Ahmed, and Gautam (2012) *Diverting the Flow: Gender Equity and Water in South Asia*

Asia is also experiencing a ‘feminisation of agriculture’ with an increasing number of women responsible for agricultural production, a result of men leaving rural areas for urban employment opportunities. Women comprise up to 70 per cent of the agricultural labour force in the region but are 20-30 per cent less productive than male farmers, globally. Access to the productive resources, decision-making and opportunities needed to redress this balance – including extension support and markets – remains disproportionately restricted<sup>8</sup>.

### Overview of the Sustainable Development Investment Portfolio

The Sustainable Development Investment Portfolio (SDIP) has been designed in response to the risks of regional instability and reduced economic prosperity associated with water, energy and food insecurity. It aims to improve the integrated management of water, food and energy in South Asia, especially addressing climate risks and the interests of women and girls. The investment focuses on three major transboundary Himalayan river basins – the Indus, Ganges and Brahmaputra – covering parts of India, Pakistan, Nepal, Bangladesh, Afghanistan and Bhutan. Water, energy and food security in these basins is threatened by the impacts of rapid industrialisation, urbanisation and burgeoning populations, and is further compounded by the impacts of climate change.



**SDIP Phase 2 (SDIP2) is the second 4-year phase (2016-2020) of a 12-year investment strategy.** This recognises that many of the critical interventions required for improving the integrated management of the water, energy and food at the basin level will require *sustained engagement* to build regional cooperation and capacity over time. Phase 2 comprises an investment of \$47 million.

**Three end-of-investment outcomes are identified for SDIP2 (to be achieved by 2020), including:**

1. Strengthened practices for regional cooperation
2. Critical new knowledge generated and used for regional cooperation
3. Improved regional enabling environment, including for private sector engagement.

<sup>8</sup> DFAT (2015) Gender Equality and Women’s Economic Empowerment in Agriculture, Operational Guidance Note, September 2015

**The end-of-investment outcomes are aligned with Australia’s broader objective for the SDIP (by 2024), which is:**

*Improved regional cooperation in the integrated management of water, food and energy resources in the sub-region – addressing the effects of climate change and the roles and interests of women and girls.*

### **Delivery Strategy**

**DFAT is investing in the work and capabilities of seven organisations (a ‘portfolio’ of partners)** engaged across three inter-related sectors including water resource management, agricultural productivity, and energy access and efficiency in South Asia.

**The portfolio investment approach is a shift away from activity-based engagements to one where the DFAT interacts with its partners on a more macro and strategic level, and in a partnership mode.** As such, DFAT is looking to make a broader contribution than it otherwise might under a more traditional style of development program (ie beyond donor funding).

**Partners are provided with ‘earmarked’ core funding to conduct activities in their specific areas of expertise, aligned with strict investment criteria, to progress the objective of SDIP and the end-of-investment outcomes for SDIP2.** The flexibility associated with this funding model provides greater capacity for SDIP partners to respond to emerging opportunities, priorities, and shifting regional dynamics.

**SDIP2 partners have been contracted for the full period of SDIP2 (4 years). SDIP2 partners include:**

- Australian Centre for International Agricultural Research (**ACIAR**)
- Commonwealth Scientific and Industrial Research Organisation (**CSIRO**)
- International Centre of Excellence in Water Resource Management (**ICE WaRM**)
- International Centre for Integrated Mountain Development (**ICIMOD**)
- International Finance Corporation (**IFC**)
- South Asia Water Initiative of the World Bank (**SAWI**)
- The Asia Foundation (**TAF**)

### **Alignment of the SDIP with Government of Australia priorities for development cooperation**

**Australia’s 2017 Foreign Policy White Paper** notes that increasing global demand for food, energy and water, in the context of high rates of population growth, is expected to place increasing strain on the world’s natural resources. It commits Australia to provide development assistance to help partner countries maximise the benefits from their natural resources and energy sectors, and specifically notes Australia’s extensive expertise in water resource management. It also notes that responding to climate change is a priority for Australia’s development assistance. More than \$1 billion has been allocated to support developing countries reduce their emissions and build resilience to climate change.

**In Australia’s current Aid Investment Plan for the South Asia Regional Development Program the stated priority is to address region-wide barriers to sustainable economic growth.** Two specific objectives are articulated, including ‘*Increased water, food and energy security in South Asia to facilitate economic growth and improve the livelihoods of the poor and vulnerable (particularly women and girls)*’ (Objective 1).

**Australia has also made a commitment to the Sustainable Development Goals (SDGs)** as a universal, global approach to reduce poverty, promote sustainable development and ensure the peace and prosperity of people across the world. The SDIP progresses at least six of the SDGs including:

- SDG 2 – Zero Hunger (End hunger, achieve food security and improved nutrition and promote sustainable development)
- SDG 5 – Gender Equality (Achieve gender equality and empower all women and girls)
- SDG 6 – Clean Water and Sanitation (Ensure availability and sustainable management of water and sanitation for all)
- SDG 7 – Affordable and Clean Energy (Ensure access to affordable, reliable, sustainable and modern energy for all)
- SDG 13 – Climate Action (Take urgent action to combat climate change and its impacts)
- SDG 17 – Partnership for the Goals (Strengthen the means of implementation and revitalise the global partnership for Sustainable Development).

#### **Purpose of this report**

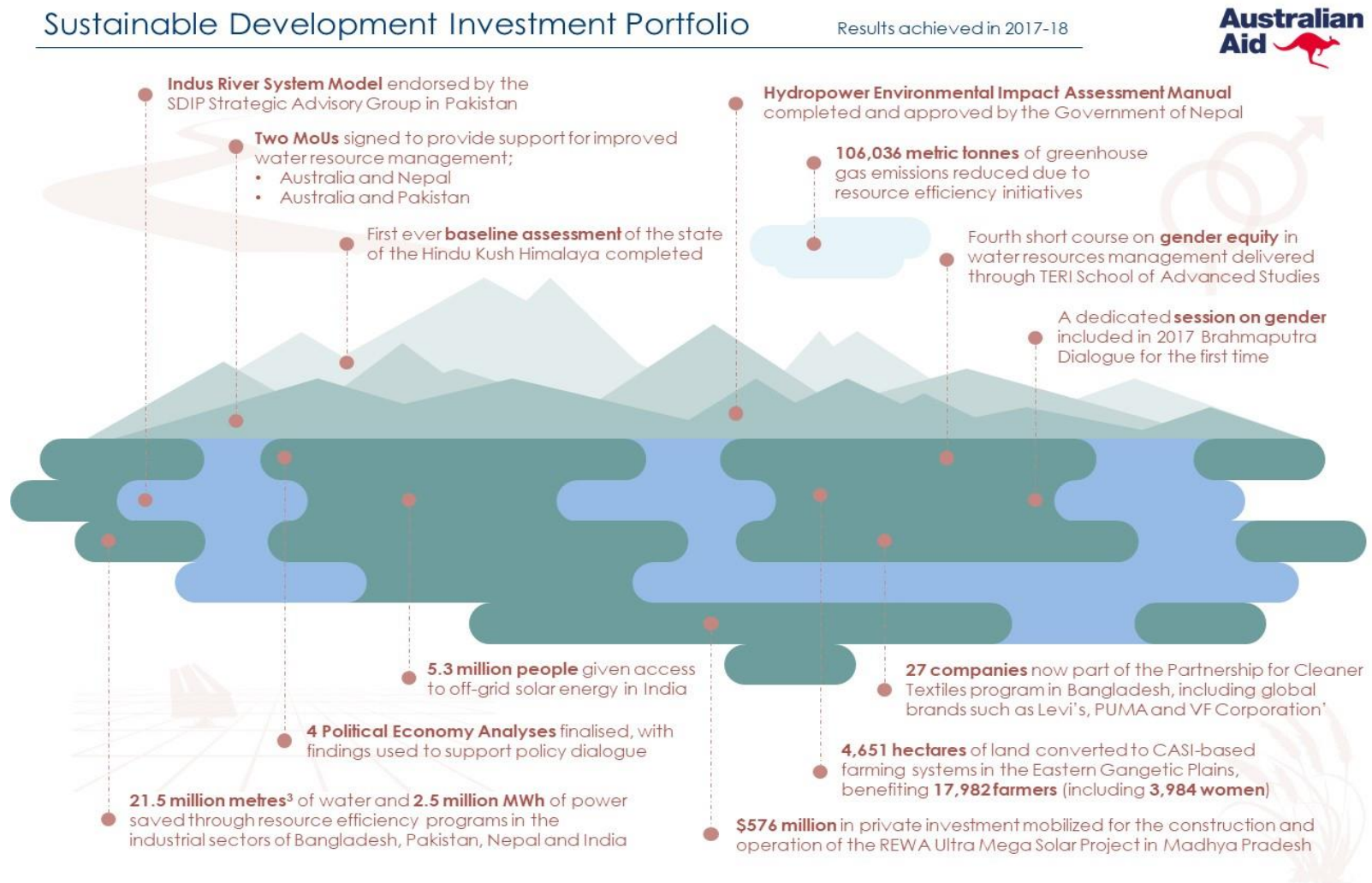
**This ‘Sustainable Development Investment Portfolio Annual Report 2017-18’ (the ‘Annual Report’)** provides an assessment of portfolio-level progress towards delivering the end-of-investment outcomes for SDIP2. It highlights the key results achieved by SDIP partners in 2017-18 as well as an assessment of cumulative progress over the period of SDIP2 to date.

**The purpose of the Annual Report is twofold:**

1. It enables further reflection within and across partners on the context and change that is happening and what this means for the work that they are engaging in and the outcomes they are working towards;
2. It provides an archive of the position gained at each annual point in the envisaged 12-year period of the Sustainable Development Investment Strategy - thereby facilitating associated evaluation and impact assessment activity.

**The narrative on results and contribution to change in this Annual Report will be an important feed in to DFAT’s corporate reporting for SDIP.** This includes the annual Aid Quality Check and the South Asia Regional Annual Program Performance Report.

## 2. Progress towards achieving the End-of-Investment Outcomes in 2017-18





## FRAMEWORK USED TO ASSESS THE EFFECTIVENESS OF THE SDIP

### Part 1: General Portfolio Results

For each of the three end-of-investment outcomes, four progress markers (or intermediate outcomes) have been developed to reflect challenges that need to be addressed. Progress towards the end of investment outcome is determined by progress in addressing these challenges.

A cumulative assessment of progress towards the 2020 target position is made (ie results achieved for SDIP2 as a whole), as well as an assessment of progress specifically for 2017-18.

### Part 2: PAF milestones and assessment of SDIP's contribution to system change

To support an assessment of SDIP's contribution to change in the broader system in which it operates, six focus areas (domains of change) have been identified, reflecting areas where there is a natural concentration of SDIP partner activity and engagement. An assessment of progress delivering the milestones in the SDIP Performance Assessment Framework (PAF) is also included here.

#### *Strengthened practice for regional cooperation*

1. Data and modelling capacity to facilitate integrated water resource management (IWRM) (Basin: Indus, Countries: Pakistan)
2. Integrated Practice [proven at scale] for cross-border water resource management (Basin: Ganges (Kosi sub-basin), Countries: India, Nepal)
3. Collaborative structures for conservation agriculture-based system intensification (CASI) (Basin: Ganges, Countries: Nepal, India, Bangladesh)
4. Institutional capacity to initiate, steer and participate in medium – large scale hydropower investment (may include PPP) (Basin: Ganges, Countries: Nepal)

#### *Critical new knowledge generated and used for regional cooperation*

5. Knowledge base: water needs for agricultural production and energy generation (Basin: Indus, Countries: Pakistan)

#### *Improved regional enabling environment, including for private sector engagement*

6. Enabling policy and regulatory environment for energy investment (production and efficiency) (Basin: Ganges, Brahmaputra, Countries: Bangladesh)

### Part 3: Institutional Strengthening (of SDIP partners)

The nature of the funding provided under the SDIP (earmarked core funding) is intended to support partners in strengthening their organisational practice both within SDIP-funded activities and more broadly across their program of work, in turn leading to greater development impact.

Areas of institutional strengthening common to all partners for SDIP2 include:

1. Improve monitoring and evaluation systems and practice, to support partner orientation towards outcomes and evidence-based programming;
2. Improve the integration of gender and social inclusion into programming;
3. Increasingly leverage Australia's diplomatic presence.

## Part 1 – General Portfolio Results

### SDIP2 Outcome 1: Strengthened Practices for Regional Cooperation

#### Progress in context

**Despite the importance of transboundary river basins to South Asia's water, food and energy security, there is limited evidence of regional cooperation on the management of these natural resources.** Treaties and agreements exist at the sub-regional and national level, but there are ongoing issues with their implementation and water is becoming increasingly scarce due to competing interests such as industrial development, agricultural development and increased electricity generation (including from both coal-fired power stations and hydropower plants). Transboundary water issues are perceived largely from a perspective of national security, which means access to water and climate data in the region is limited. A lack of transparency and reliability in the available data is a significant constraint to dialogue and agreement on the management of shared resources at all levels (including national and regional).

#### Cumulative progress for 'Strengthened Practices for Regional Cooperation' for SDIP2 to date

**SDIP partners have been working with key government organisations and the private sector in South Asia to develop new tools and approaches to managing natural resources and to promote good practices around the collection and management of data.** These are considered to be some of the essential 'pre-conditions' for strengthening cooperation (though most of the focus to date has been on strengthening practices at the provincial level (ie within countries)). The benefits of an investment with a long-term horizon are starting to be realised and good progress is evident, particularly in the area of integrated water resource management (IWRM), with national governments (including the Government of Nepal and the Government of Pakistan) increasingly adopting IWRM principles into their planning and policy frameworks. SDIP partners have also been instrumental in developing flood forecasting and flood early warning systems, and there is strong evidence that sharing of data and information from these systems across both national and international borders has saved lives and reduced the financial cost of flood events. Progress building the renewable energy sector in India is also growing, particularly for solar power, with SDIP partners at the centre of innovative efforts to increase access to electricity through small-scale and large-scale solar plants.

**SDIP partners have played an important role supporting policy dialogue at both the national and regional level in South Asia and have promoted the importance of including climate change and the impact on women and girls within these discussions.** There has been good progress made, with evidence of increasing representation of high-level decision-makers at policy dialogue in the region, and politically sensitive issues around river basin planning, cross border electricity trade and the allocation of natural resources (including water) being openly discussed at the national and regional levels. Gender equality issues are increasingly being considered in policy dialogue,<sup>9</sup> although there is no substantive evidence that higher numbers of women are participating.

**Four progress markers (intermediate outcomes) for SDIP2 Outcome 1 have been developed to support an overall assessment of progress towards the end-of-investment target for 2020.** An assessment of cumulative progress based on the available evidence has been made for each intermediate outcome, as well as the specific progress made for that intermediate outcome in 2017-18. The assessments are summarised in Table 1 below.

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<sup>9</sup> For example, a dedicated session on gender was recently included in the Brahmaputra Dialogue for the first time.



**Table 1: Summary of progress towards SDIP2 Outcome 1**

Outcome 1: Strengthened practices for regional cooperation						
	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO1.1: New tools and approaches to manage natural resources have been collaboratively developed and are being applied.</i>				●		✓✓✓✓✓
<i>IO1.2: Key individuals and/or institutions (national/regional) have increased technical capacity to manage natural resources and demonstrate ownership of new tools and approaches.</i>				●		✓✓✓✓✓
<i>IO1.3: Common standards for data collection and analysis are increasingly being agreed and data is increasingly being shared between key institutions</i>			●			✓✓✓
<i>IO1.4: Policy dialogue is increasingly occurring and WEF nexus, climate change and gender issues are routinely discussed</i>				●		✓✓✓✓

### Progress by intermediate outcomes relevant to SDIP2 Outcome 1

#### **1.1 New tools and approaches have been collaboratively developed and are being applied**

	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO1.1: New tools and approaches to manage natural resources have been collaboratively developed and are being applied.</i>				●		✓✓✓✓✓

### Highlights of results achieved in 2017-18

**New water modelling tools have been developed and are strengthening the capacity of decision-makers to make evidence-based decisions, including in Pakistan and in India.** In the Indus Basin, CSIRO has worked collaboratively with Government of Pakistan counterparts (including the Ministry of Water and Power and the Pakistan Water and Power Development Authority) to develop the Indus River System Model (IRSM), which offers a common water modelling framework for water resource management in Pakistan. The IRSM can be used to assess the impact of different climate change, water sharing and infrastructure development scenarios on river flows and has been endorsed by the SDIP Pakistan Strategic Advisory Group following joint testing of the model.

In India, SAWI's work on the Ganga River Basin Modelling suite and associated Water Information Dashboard was completed and transferred to India's Central Water Commission, with reports suggesting there has been strong engagement by authorities through testing and initial application.<sup>10</sup>

Innovative work on Riverware and Waterware modelling software for IWRM in the Damodar Basin in India has also been completed by SAWI and is undergoing testing by the Indian government before

<sup>10</sup> SAWI Annual Report 2017-18 pg. 24


being rolled out. These tools are expected to improve operation of five reservoirs to serve multiple uses, including hydropower, irrigation and domestic uses, while ensuring minimisation of floods.

**Good progress continues to be made in the development of flood forecasting tools and early warning systems and there is clear evidence of their application.** In early 2018 flood forecasting technologies were jointly developed by ICIMOD and the Pakistan Meteorological Department for the Chenab Basin.<sup>11</sup> This follows the development of Community Based Flood Early Warning Systems (CBFEWS) in Assam (India), Ratu Khola (Nepal) and Gilgit Baltistan (Pakistan) in 2017. CBFEWS are proven to save lives, for example, on 3 August 2017 in Gilgit Baltistan, an early flood warning during a flood event allowed 2800 people from 350 households to flee to higher ground with their livestock.<sup>12</sup> The Chief Minister of Gilgit Baltistan has since committed to scale out the system in other disaster-prone areas of the province.

**New tools have been developed and are being applied to promote improved resource efficiency in the textiles industry.** In Bangladesh, several international textile manufacturers have adopted a real time resource efficiency monitoring tool developed by IFC in collaboration with the Textiles Sector Technology Centre to monitor system performance, help reduce energy costs, minimise the use of groundwater, and improve wastewater management.

**An external review of the Sustainable and Resilient Farming Systems Intensification (SRFSI) project in the Eastern Gangetic Plains confirmed there had been strong collaboration with farmers in the development of new technologies to support CASI practices.** The external review also found that CASI approaches improve the productivity and profitability of rice, maize, wheat and lentil farming systems while at the same time reducing the amount of water (4-16 per cent), fuel (10-12 per cent) and labour (13-41 per cent) needed to produce a crop (relative to conventional farming practices), thereby increasing the resilience and profitability of small-scale farmers.<sup>13</sup> In 2017-18, an additional 4,651 hectares of land was converted to CASI based farming systems, benefiting an additional 17,982 farmers (3,984 women).<sup>14</sup>

## ***1.2 Key individuals and/or institutions (national/regional) have increased technical capacity to manage natural resources and demonstrate ownership of new tools and approaches***

	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO1.2: Key individuals and/or institutions (national/regional) have increased technical capacity to manage natural resources and demonstrate ownership of new tools and approaches.</i>						✓✓✓✓✓

## ***Highlights of results achieved in 2017-18***

**Technical assistance provided by SDIP partners is building the capacity of counterparts in key government agencies in the region, including in Nepal, Pakistan, India and Afghanistan.** Technical support is being provided to the Government of Nepal by ICE WaRM, CSIRO and ICIMOD to implement their new National Water Policy and for the pilot Kamala Basin planning initiative.<sup>15</sup> There is evidence

<sup>11</sup> ICIMOD Annual Report 2017-18 pg. 5

<sup>12</sup> ICIMOD Annual Report 2017-18 pg. 10

<sup>13</sup> ACIAR Annual Report 2017-18 pg. 13

<sup>14</sup> ACIAR Annual Report 2017-18 pg. 15

<sup>15</sup> ICE WaRM Annual Report 2017-18 pg. 12

of good progress, with representatives from the Government of Nepal presenting the jointly authored Kamala Basin field trip report to the Australian Ambassador, which explicitly integrates IWRM principles and practices.<sup>16</sup> A representative of the Water and Energy Commission Secretariat (WECS) co-authored and presented the methodology for the Kamala Basin Planning Initiative at a conference<sup>17</sup> in Kathmandu in May 2018, reflecting WECS taking greater ownership of the Kamala Basin Initiative and demonstrating improved technical capacity in IWRM.


Australia is also considered to be a trusted source of technical expertise for the Government of Pakistan, with considerable investments made by ICE WaRM and CSIRO to build relationships and provide technical support to government ministries, including the Ministry of Water and Power and the Water and Power Development Authority.<sup>18</sup>

**SDIP is playing an influential role in the development of new national policies and regulations that govern the management of natural resources, including in Pakistan and Nepal.** In Pakistan, a National Water Policy was released for the first time (April 2018). The policy includes a shift from sectoral to integrated approaches to water management, a commitment to national hydrological data management and sharing, and a recognition of the role of scientific knowledge and models to inform water negotiations and infrastructure planning decisions.<sup>19</sup> This strongly reflects technical assistance and advice provided by CSIRO and ICE WaRM over several years.

In Nepal, IFC played a critical advisory role regarding the development of environmental and social standards for hydropower projects, including through the development of a Hydropower Environmental Impact Assessment (EIA) Manual. In August 2018 the Manual was adopted by the Government of Nepal,<sup>20</sup> demonstrating increased ownership and a commitment to ensure socially and environmentally sustainable development of hydropower resources.

**Ownership of new tools and approaches to managing natural resources is increasingly evident at the local level in Nepal.** For example, ICIMOD reported that local authorities and communities in the Koshi Basin have been using CBFWS and, importantly, have invested their own money to maintain and repair their CBFWS instruments.<sup>21</sup> It was also reported that newly elected officials in Saptari district, Nepal, have taken ownership of their local water use master plan, which provides a framework for managing water resources and uses at the village level.<sup>22</sup>

### ***1.3 Common standards for data collection and analysis are increasingly being agreed and data is increasingly being shared between key institutions***

	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO1.3: Common standards for data collection and analysis are increasingly being agreed and data is increasingly being shared between key institutions</i>						✓✓✓

<sup>16</sup> CSIRO Annual Report 2017-18 pg. 16

<sup>17</sup> The 8th Asian Regional Conference of the International Commission on Irrigation and Drainage

<sup>18</sup> ICE WaRM Annual Report 2017-18 pg. 8

<sup>19</sup> CSIRO Annual Report 2017-18 pg. 14

<sup>20</sup> IFC Annual Report 2017-18 pg. 7

<sup>21</sup> ICIMOD Annual Report 2017-18 pg. 12

<sup>22</sup> ICIMOD Annual Report 2017-18 pg. 12

### Highlights of results achieved in 2017-18


**There is some evidence of a stronger commitment to improving integrated data collection and management practices, particularly in Pakistan.** For example, Pakistan's National Water Policy (released in April 2018) makes specific reference to the establishment of a national information database, with the aim of improving information quality and accessibility to support decision making.<sup>23</sup> While SDIP partners are considered to have had only modest influence on this decision, it does follow a significant amount of work installing a centralised hydrological data management system (Hydstra) in Pakistan across three provincial irrigation departments of Punjab, Sindh and Khyber Pakhtunkhwa. This has reportedly led to shifts in attitudes to data sharing between key agencies, including the Water and Power Development Authority of Pakistan (WAPDA) now set up to use the Hydstra system.

Also in Pakistan, the endorsement of the Indus River System Model by the SDIP Pakistan Strategic Advisory Group (which includes several key Government Ministries),<sup>24</sup> is the first step towards the development of a common information basis upon which decisions can be made with respect to the use of water in Pakistan.

**There are some cases of SDIP partners being able to publish or being involved in projects where data has been published, contributing to greater transparency.** For example, under the CASI project, qualitative and quantitative data from over 3,000 on-farm trials in the Eastern Gangetic Plains was reported in a standard format. The data was then centralised and has been made publicly available.<sup>25</sup>

Similarly, as part of the HKH Assessment, data in the form of different climate change scenarios has been made accessible to policy makers and practitioners through the HKH Climate and Hydrology Visualisation and Access Portal.

### ***1.4 Policy dialogue is increasingly occurring and water-energy-food nexus, climate change and gender issues are routinely discussed***

	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO1.4: Policy dialogue is increasingly occurring and WEF nexus, climate change and gender issues are routinely discussed</i>						✓✓✓✓

### Highlights of results achieved in 2017-18

**There is evidence of improved leadership and capacity to convene multi-stakeholder dialogue processes in the region.** For example, the Brahmaputra Basin-level dialogue, supported by SAWI, has made significant strides. The Brahmaputra River Symposium<sup>26</sup> included prominent stakeholders from all four participant countries for the first time, and it was reported there was consensus amongst delegates that the dialogue process has the potential to navigate the geopolitical complexity hindering good governance in the basin.<sup>27</sup>

<sup>23</sup> CSIRO Annual Report 2017-18 pg. 10

<sup>24</sup> CSIRO Annual Report 2017-18 pg. 11

<sup>25</sup> ACIAR Annual Report 2017-18 pg. 13

<sup>26</sup> This was held in Delhi in September 2017

<sup>27</sup> SAWI Annual Report 2017-18 pg. 29

Similarly, the Upper Indus Basin (UIB) Network Dialogue has been successful in fostering science-based cooperation among the four riparian countries<sup>28</sup> with respect to present and future water availability, and the impact of climate change has been central to the dialogue.

TAF co-hosted the South Asia Power Summit in December 2017, an annual platform to discuss the most pressing issues facing India's power sector. It was attended by 100 of India's largest power sector companies/financiers and addressed by HOM New Delhi.<sup>29</sup>

**Gender considerations are increasingly being incorporated into policy dialogue.** For example, the most recent Brahmaputra Dialogue included a dedicated gender session for the first time, while gender was also evident as a cross-cutting issue within the recent Hindu Kush Himalaya Resilience Forum.<sup>30</sup> This forum brought together stakeholders from different levels to discuss science, policy and practice, and included a specific session on gender.

A workshop facilitated by ACIAR on gender, water and agriculture<sup>31</sup> brought together regional experts from the research and development sector, with the aim of understanding the ways in which gender is perceived in the Eastern Gangetic Plains, how this changes with time and place, and the pathways by which complex gender relations have emerged.<sup>32</sup>

**The private sector is increasingly being engaged in policy dialogue.** In late 2017 the fourth Climate Business Forum (facilitated by IFC) was held in New Delhi, an event that brought together business leaders in banking, energy, agribusiness, and climate-related sectors. This conference significantly expanded the knowledge base on innovative climate-smart technologies. A report was launched at the forum which estimated the climate investment opportunity in South Asia at \$3.4 trillion.<sup>33</sup>

## Outcome 2: Critical new knowledge generated and used for regional cooperation

### Progress in context

Conceptual frameworks on the management of natural resources have evolved to embrace the idea that water, energy and food are inextricably linked. However, **there is limited understanding of the trade-offs associated with the use of natural resources in South Asia, and limited understanding of the impact of different resource allocations, including on the environment and on women and girls.** Climate change adds to the uncertainty, with higher rates of glacial melt and changing rainfall patterns expected to affect the flow and availability of water within South Asia's major river basins.

### Cumulative progress for 'Critical new knowledge generated and used for regional cooperation' for SDIP2 to date

**SDIP partners have made good contributions to the evidence base for the management of natural resources in South Asia.** Political economy analyses, scientific research and guiding manuals for policy implementation have all been completed and several of these studies have been published.<sup>34</sup> Excellent

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<sup>28</sup> Afghanistan, China, India, Pakistan

<sup>29</sup> Since the reporting period, a second power summit was held in November 2018 and a third is planned for September 2019.

<sup>30</sup> This was held in Kathmandu in December 2017

<sup>31</sup> This was held in Delhi in September 2017

<sup>32</sup> ACIAR Annual Report 2017-18 pg. 7

<sup>33</sup> IFC Annual Report 2017-18 pg. 20





<sup>34</sup> For example, CSIRO's 'Seasonal streamflow forecasting in the upper Indus Basin of Pakistan: an assessment of methods.' Hydrol. Earth Syst. Sci., 22, 3533–3549, 2018 and CSIRO's 'Environmental Assessment of Manchar Lake' report published by Pakistan Council of Research in Water Resources (in collaboration with USAID, University of Mehran, CSIRO and ANU);

progress has been made in terms of building understanding of the impact of climate change in terms of water, food and energy security, including contributions to the Hindu Kush Himalaya Assessment, while environmental and social considerations must now be factored in to the development of new hydropower projects in Nepal following completion and endorsement by the Government of Nepal of Environmental Impact Assessment guidelines.

**However, while there is a sense that individuals and organisations are increasingly embracing the idea of connecting knowledge and decision-making, evidence of this occurring in practice, particularly at the regional level, is still limited.** There are question marks around the capacity of local, provincial and national governments to manage the implications of new data and information as it is being generated, and the extent to which this feeds in to dialogue on the management of shared resources is unclear.


**Four progress markers (intermediate outcomes) for SDIP2 Outcome 2 have been developed to support an overall assessment of progress towards the end-of-investment target for 2020.** An assessment of cumulative progress based on the available evidence has been made for each intermediate outcome, as well as the specific progress made for that intermediate outcome in 2017-18. The assessments are summarised in Table 2 following.

**Table 2: Summary of progress towards SDIP2 Outcome 2**

Outcome 2: Critical new knowledge generated and used for regional cooperation						
	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO2.1: New knowledge advances the understanding of key resource (water-energy-food) challenges and trade-offs</i>						✓✓✓✓
<i>IO2.2: New knowledge underpins dialogue on national/ regional cooperation</i>						✓✓✓
<i>IO2.3: New knowledge considers climate change and the impact of natural resource management decisions on the environment</i>						✓✓✓✓✓
<i>IO2.4: New knowledge considers the impact of natural resource management decisions on women and girls</i>						✓✓✓✓

## Progress by intermediate outcomes relevant to SDIP2 Outcome 2

### **3.1 New knowledge advances the understanding of key resource (water-energy-food) challenges and trade-offs**

	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO2.1: New knowledge advances the understanding of key resource (water-energy-food) challenges and trade-offs</i>						✓✓✓✓

### Highlights of results achieved in 2017-18

The Asia Foundation in collaboration with local partners completed several Political Economy Analyses (PEAs) in 2017-18. These studies serve to improve awareness and understanding of the political, economic and social processes promoting (or constraining) change in the region. The PEAs completed in 2017-18 include:

- ***‘Fragility, Complexity and Development: a political economy analysis of the Koshi basin’***<sup>35</sup> which aims to develop, update and further unpack the complex dynamics, interactions and concerns in the Koshi Basin;
- ***‘The Price of Power: the political economy of electricity trade and hydropower in eastern South Asia’***<sup>36</sup> which explores the politics and economics of prospective electricity trade between Bangladesh, Bhutan, India and Nepal; and
- ***‘The Political Economy of Agricultural Water Use in Lower Indus Basin’***<sup>37</sup> which considers the political and economic factors that influence water governance decisions in the Lower Indus Basin and identifies potential drivers of change to bring about policy reform.

Research conducted by ACIAR in the Eastern Gangetic Plains has demonstrated that new technologies and management practices can improve the productivity and profitability of small-scale farmers. It was found that Conservation Agriculture-based System Intensification (CASI) practices improved the productivity and profitability of rice, maize, wheat and lentil farming systems while at the same time reducing the amount of water (4-16 per cent), fuel (10-12 per cent) and labour needed to produce a crop.<sup>38</sup>

SAWI was instrumental in developing a hydro-met manual in collaboration with the Indian Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR RD&GR). The manual serves as guidance for government agencies as they plan, design, install and use hydro-met monitoring systems to monitor all the processes of the hydrological cycle, including rainfall, evaporation, river flow, groundwater recharge and extractions.

<sup>35</sup> Released March 2018


<sup>36</sup> Released February 2018, <https://asiafoundation.org/publication/the-price-of-power/>

<sup>37</sup> Released 2018

<sup>38</sup> ACIAR Annual Report 2017-18 pg. 13



### 3.2 New knowledge underpins dialogue on national/regional cooperation

	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
IO2.2: New knowledge underpins dialogue on national/ regional cooperation						✓✓✓


#### Highlights of results achieved in 2017-18

At the regional level, the importance of drawing on the available evidence base for dialogue and decision-making is increasingly being recognised, although firm evidence of this occurring in practice is more limited. One of three key actions from the most recent Brahmaputra Dialogue is to develop a Brahmaputra Knowledge Portal, which would collate and curate the currently dispersed information and data on the Brahmaputra Basin to support more informed decision-making.<sup>39</sup>

Evidence of progress at the national level is more compelling, including in Pakistan and Nepal. In Pakistan, the Joint Secretary of MoWR requested the Indus River System Model (IRSM) be used to analyse potential infrastructure developments in the Indus River.<sup>40</sup> Preliminary analysis of the results informed high-level discussions in key government agencies, including the Ministry of Water and Power (MoWP) and the Ministry of Water Resources (MoWR).

In Nepal, new knowledge, mentoring and technical support provided by SDIP partners including ICE WaRM and ICIMOD has been used by the Government of Nepal to inform the development and implementation of new policies at multiple levels, up to and including the National Water Policy. ICIMOD also developed an inventory of glacial lakes in river basins within and upstream of Nepal, which identified potentially dangerous glacial lakes to support preparation for the Government of Nepal's Glacial Lake Outburst Floods (GLOF) risk management project.<sup>41</sup>

### 3.3 New knowledge considers climate change and the impact of natural resource management decisions on the environment.

	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
IO2.3: New knowledge considers climate change and the impact of natural resource management decisions on the environment						✓✓✓✓✓

#### Highlights of results achieved in 2017-18

SDIP partners produced several new knowledge products that directly address the impact of climate change on water-energy-food security in South Asia. ICIMOD completed research on behalf of the Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP) thereby contributing to the most comprehensive study ever undertaken of key development issues in the Hindu Kush Himalaya (HKH) region. The HKH Assessment<sup>42</sup> is the culmination of several years of research and significantly enhances the understanding of the processes at work in the cryosphere and the rapid rate of change

<sup>39</sup> SAWI Annual Report 2017-18 pg. 30

<sup>40</sup> CSIRO Annual Report 2017-18 pg. 11

<sup>41</sup> ICIMOD Annual Report 2017-18 pg. 4

<sup>42</sup> The HKH Assessment was launched February 2019 and includes contributions from more than 350 scientists. Refer to <http://www.icimod.org/himap>



that is occurring in the high mountains. One of the key findings of the report is that 36 per cent of the glaciers in the Hindu Kush Himalaya are projected to disappear by 2100, even if global warming is limited to 1.5 degrees Celsius. If temperatures exceed 2 degrees Celsius then two-thirds of the glaciers will disappear. This has critical implications for 240 million people who live in the Hindu Kush Himalaya and the estimated 1.65 billion people downstream who rely on rivers fed by glacial melt for their social and economic wellbeing.

A regional study completed by CSIRO on future water run-off trends is also a significant contribution to building a better understanding of the impacts of climate change on water resources in South Asia. The research confirms a general tendency towards drier conditions, more intense precipitation events and a steady coherent warming trend in South Asia, with runoff expected to increase throughout most of the region except in the southern part of the Tibetan Plateau and arid areas of the far north-west.

In Pakistan, greater understanding has been built amongst researchers and government agencies on the specific challenges of considering climate change in water resource management. As a result, Pakistani government agencies will explore how climate change considerations can be integrated into the IRSM to evaluate climate-related risks on provincial and national water security,<sup>43</sup> while scientists from all four riverine Indus Basin countries have developed a joint research proposal '*Understanding and assessing the impact of climate change in the Indus Basin*' which will be progressed through 2018-19.<sup>44</sup>

**New knowledge has been developed which considers the impact of water-energy-food management decisions on the environment.** In Pakistan, IFC's Hydro Advisory program completed a strategy for Sustainable Hydropower in the Jhelum-Poonch basin, which was informed by consultations with key stakeholders including major hydropower developers, government departments, scientists and environmental NGOs active in the basin. This ensures that all stakeholders in the basin have a common understanding of the potential impacts of multiple hydropower project development on key biodiversity values and ecosystem services of the basin.

**New knowledge developed by SDIP partners is supporting an environmental and climate change lens being applied to policy and regulatory reform.** In Nepal, the Government recently approved the Environmental Impact Assessment (EIA) Manual for hydropower development developed by IFC, which provides guidelines for the development of hydropower infrastructure that is environmentally, socially, culturally and economically viable, improving prospects for the development of a sustainable hydropower sector.<sup>45</sup>

Resilience guidelines for climate change and natural disasters in hydropower and dams were also developed by SAWI, with special reference to GLOFs and other natural disasters specific to South Asia.<sup>46</sup> These guidelines are designed to improve climate resilience for the hydropower and dams development community and to become a practical set of methods and insights that enable projects to be resilient to future climate change risks as they proceed to completion.

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<sup>43</sup> CSIRO Annual Report 2017-18 pg. 36

<sup>44</sup> SAWI Annual Report 2017-18 pg. 41

<sup>45</sup> IFC Annual Report 2017-18 pg. 7

<sup>46</sup> SAWI Annual Report 2017-18 pg. 90

### 3.4 New knowledge considers the impact of natural resource management decisions on women and girls

	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
IO2.4: New knowledge considers the impact of natural resource management decisions on women and girls						✓✓✓✓

#### Highlights of results achieved in 2017-18

##### Research, analysis and training delivered by SDIP partners continues to incorporate a gender lens.

This includes the PEA studies conducted by TAF in the Koshi and Lower Indus basins, which both included a gender lens. The Lower Indus Basin PEA found that women were systematically excluded from decision making processes on irrigation management despite being central to agricultural labour in that country.<sup>47</sup> This leaves the basin in a situation where female end-users who bear the impacts of a changing climate and inefficient governance are not heard in the reform process.

For the SRFISI project (ACIAR) in the Eastern Gangetic Plains, a report on the '*Impact of gender mainstreaming and inclusion strategies*' was completed,<sup>48</sup> summarising the various strategies implemented in the three participating countries to ensure the experience for women and girls was included. The key strategy in all the test sites was to ensure at least 30 per cent women were included in all project trials and training activities. The external review of the SRFISI project found evidence of major advancements in gender empowerment and mainstreaming.

Another short course on gender equity in the water sector was delivered by TERI School of Advanced Studies (previously TERI University) in India with support from ICE WaRM.<sup>49</sup> The course builds the understanding of gender considerations in water management amongst government officials, NGOs, development agencies and the private sector.

##### Innovative thinking and new approaches are driving a stronger consideration of gender in scientific research.

A report entitled '*Mainstreaming and modelling: How gender analysis can be applied to a water management model framework*' completed by CSIRO illustrates how values inform choices throughout the modelling process and how to identify where applying a gender lens could be relevant, what it could change, the challenges to implementing gender analysis, and the consequences of excluding gender concerns throughout the modelling process<sup>50</sup>.

##### Targeted studies completed by SDIP partners have built greater understanding and awareness of the linkages between water-energy-food and the impact on women and girls.

In Pakistan, a research project co-designed between CSIRO and the University of Agriculture Faisalabad (UAF) is exploring gender issues in groundwater and the impacts on livelihoods of combined surface and groundwater-use decisions.<sup>51</sup> In Bangladesh, research conducted by CSIRO in collaboration with Bangladesh Agricultural University developed a greater understanding of cropping patterns and resource use and considered socio-economic and gender outcomes under different water conditions.<sup>52</sup>

<sup>47</sup> TAF Annual Report 2017-18 pg. 7

<sup>48</sup> ACIAR Annual Report 2017-18 pg. 16

<sup>49</sup> ICE WaRM Annual Report 2017-18 pg. 13

<sup>50</sup> CSIRO Annual Report 2017-18 pg. 7

<sup>51</sup> CSIRO Annual Report 2017-18 pg. 26

<sup>52</sup> CSIRO Annual Report 2017-18 pg. 21

## Outcome 3: Improved regional enabling environment, including for private sector engagement

### Progress in context

An enabling environment of effective policies, strategies and legislation is critical to support investment in new and innovative solutions to promote water-energy-food security, particularly for the private sector. However, in South Asia, there are significant barriers which preclude private sector investment. These include limited access to finance (credit), limited technical skills and capacity, and uncertainty around the nature and implementation of policy and regulatory frameworks.

### Cumulative progress for 'Improved regional enabling environment, including for private sector engagement' for SDIP2 to date

SDIP partners have contributed to an improved enabling environment, including for private sector engagement, in several ways. Good progress is particularly evident in the enabling environment for investment in the energy sector, with new and innovative financing mechanisms contributing to strong growth in access to off-grid solar solutions (for example, solar lanterns), and large-scale solar projects (Rewa Ultra Mega Solar project in Madhya Pradesh). Good progress has also been made with respect to energy efficiency measures, such as the support provided to the Punjab provincial government in Pakistan to draft a Five-Year Efficiency & Conservation Strategy (which provides a regulatory framework to reduce energy use in the industrial sector).


Four progress markers (intermediate outcomes) for SDIP2 Outcome 3 have been developed to support an overall assessment of progress towards the end-of-investment target for 2020. An assessment of cumulative progress based on the available evidence has been made for each intermediate outcome, as well as the specific progress made for that intermediate outcome in 2017-18. The assessments are summarised in Table 3 below.

Outcome 3: Improved regional enabling environment, including for private sector engagement						
	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO3.1: Individuals and/or private firms have increased access to finance and other resources or support services (machinery, energy, market information)</i>				●		✓✓✓
<i>IO3.2: International standards (including environmental and social standards) are increasingly adopted in government regulations and guidelines and/or by the private sector</i>				●		✓✓✓✓
<i>IO3.3: Private firms have improved technical capacity and/or have access to technical assistance to invest in responses to food-water-energy challenges and the impact of climate change</i>				●		✓✓✓✓
<i>IO3.4: New policies and regulations are increasingly gender-responsive and are being enacted.</i>			●			✓✓✓

**Table 3: Summary of progress towards SDIP2 Outcome 3**

## Progress by intermediate outcomes relevant to SDIP2 Outcome 3

### **3.1 Individuals and/or private firms have increased access to finance and other resources or support services (machinery, energy, market information)**


	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No Progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO3.1: Individuals and/or private firms have increased access to finance and other resources or support services (machinery, energy, market information)</i>						✓✓✓

#### Highlights of results achieved in 2017-18

**Significant investment from the private sector has been mobilised for large-scale solar projects.** In India (Madhya Pradesh), the Rewa Ultra Mega Solar Public-Private Partnership (PPP) was completed, with negotiations resulting in the mobilisation of USD 2.10 from commercial lenders for each USD 1.00 loan by IFC,<sup>53</sup> and private investment of USD 576 million. The finalisation of the PPP demonstrates that well-structured large-scale solar projects can attract commercial financing, and a further three solar parks in Madhya Pradesh with a potential 1,500MW of renewable energy capacity (requiring US\$900 million of private sector investment) are being considered. Negotiations are underway with the Solar Energy Corporation of India for a national roll out of the model.

**SDIP partners have been able to support a small number of farmers gain access to finance, including women.** In Nepal, with support from ICIMOD, an innovative financing mechanism continues to drive the implementation of Solar Powered Irrigation Pumps (SPIPs), which provide small-scale farmers with renewable energy to withdraw shallow groundwater and grow food. In 2017-18, an additional 53 SPIPs were installed in four districts in Nepal, supporting farmers to grow more crops, undertake fish farming, and save on energy costs such as diesel.<sup>54</sup>

### **3.2 International standards (including environmental and social standards) are increasingly adopted in government regulations and guidelines and/or by the private sector**

	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO3.2: International standards (including environmental and social standards) are increasingly adopted in government regulations and guidelines and/or by the private sector</i>						✓✓✓✓

#### Highlights of results achieved in 2017-18

**Good progress has been observed in the hydropower sector across South Asia, with international best practice standards relating to the development of hydropower projects increasingly being endorsed by national governments.** In Nepal, SDIP partners have been building government and industry associations' capacity around good international industry practices related to the sector and to structuring hydropower projects. This includes good international industry practices around E&S and benefit-sharing standards, as well as mainstreaming an inclusive and gender-sensitive approach


<sup>53</sup> IFC Annual Report 2017-18 pg. vi

<sup>54</sup> ICIMOD Annual Report 2017-18 pg. 33

into decision-making processes. Similarly, in Bhutan, following assistance from SAWI the Government finalised its first ever '*Guidelines for the Development of Hydropower*'.<sup>55</sup> The guidelines are instrumental to incorporating social and environmental aspects, and cumulative impacts, into future plans for hydropower expansion.

**There is also increasing evidence of private sector companies adopting international standards with respect to resource and energy efficiency, leading to reduced emissions and reducing the demand for key inputs to production, such as water.** In the cement and construction industries in India, IFC provided advisory support to assist private companies qualify for GreenCo and GreenPro ratings across their facilities.<sup>56</sup> Progress also continues to be made promoting resource efficiency standards in the industrial sectors of Bangladesh (textiles), Nepal (cement) and Pakistan (textiles and packaging).

### ***3.3 Private firms have improved technical capacity and/or have access to technical assistance to invest in responses to food-water-energy challenges and the impact of climate change***


	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO3.3: Private firms have improved technical capacity and/or have access to technical assistance to invest in responses to food-water-energy challenges and the impact of climate change</i>						✓✓✓✓

#### ***Highlights of results achieved in 2017-18***

**IFC has been providing advisory services to build the capacity of private companies and develop a pipeline of bankable hydropower projects consistent with international technical, commercial and E&S standards.** This is particularly the case in Nepal, with evidence of improved capacity within at least one company to acquire a generation licence and progress negotiations for a Project Development Agreement with the government.<sup>57</sup>

**IFC has also been providing advisory services to support improvements in resource efficiency.** In Pakistan, IFC has commenced out-scaling of their successful Partnership for Cleaner Textiles (PaCT) program and have engaged with companies in other sectors (packaging, automotive, cement, chemicals, agri-business) to promote improvements in resource efficiency, particularly around the use of water and energy.

### ***3.4 New policies and regulations are increasingly gender-responsive and are being enacted***

	Cumulative assessment of progress for SDIP2 to date					Progress in 2017-18
	No progress	Limited Progress	Some Progress	Good Progress	Excellent Progress	(5-point scale)
<i>IO3.4: New policies and regulations are increasingly gender-responsive and are being enacted.</i>						✓✓✓

<sup>55</sup> SAWI Annual Report 2017-18 pg. 12

<sup>56</sup> IFC Annual Report 2017-18 pg. 15

<sup>57</sup> IFC Annual Report 2017-18 pg. 6

### Highlights of results achieved in 2017-18

**At the highest level there have been some positive shifts in terms of new policies and regulations being gender-responsive.** Pakistan's National Water Policy (2018) and Nepal's National Water Policy (2017) both refer to the importance of including women in decision-making. Similarly, the Royal Government of Bhutan's first ever '*Guidelines for the Development of Hydropower*' will be instrumental for incorporating social considerations into future plans for hydropower development.

**SDIP has had some success raising awareness of gender issues,** including through supporting the participation of women in SDIP-led activities and providing support to women at an individual level (promoting gender sensitive technology, supporting female entrepreneurs). High Level Study Programmes to Australia facilitated by ICE WaRM have included women, while equity discussions have been incorporated into different components of the study programmes so that senior officials (mostly men) have been challenged to think about these issues<sup>58</sup>.

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<sup>58</sup> ICE WaRM Annual Report 2017-18 pg. 26

## Part 2 – PAF Milestones and assessment of SDIP contribution to system change

### ASSESSMENT OF PROGRESS DELIVERING THE SDIP PERFORMANCE ASSESSMENT FRAMEWORK (PAF) MILESTONES IN 2017-18

PAF Domain of change	PAF Milestones (2017-18)	Summary of progress
<b>Data and modelling capacity to facilitate IWRM:</b> Indus Basin [Pakistan]	Partially Achieved	<ul style="list-style-type: none"> <li>The SDIP Pakistan Strategic Advisory Group has endorsed the Indus River System Model as having the potential for a common modelling framework for Pakistan (which would then inform a joint understanding of current and future water availability) (CSIRO).</li> <li>Key government agencies have promoted the development of a centralised data management system (including within the new National Water Policy), and WAPDA has piloted the implementation of HYDSTRA for flow hydrological datasets (CSIRO).</li> <li>The Upper Indus Basin Network continues to be a positive forum for knowledge exchange around present and future water availability, and members have agreed to expand the network to all basin countries including Afghanistan, China, India and Pakistan.</li> <li>The Government of Pakistan has actively engaged and sought technical advice from CSIRO, ICE WaRM and other partners with expertise in IWRM.</li> </ul>
<b>Integrated practice [proven at scale] for cross-border water resource management:</b> Ganges Basin, Kosi Basin [India & Nepal]	Largely Achieved	<ul style="list-style-type: none"> <li>Technical support and capacity building in Bihar is facilitating cross-border cooperation on data sharing for flood modelling (SAWI).</li> <li>There is evidence that community members and the local government in Bihar are actively maintaining community-based flood early warning systems (ICIMOD).</li> <li>A partnership has been established with the Bihar State Disaster Management Authority which will focus on enhancing upstream-downstream linkages for DRR (ICIMOD).</li> <li>Newly elected officials in Saptari district, Nepal, have taken ownership of the local water use master plan and expressed their intention to implement it.</li> <li>The TAF PEA of the Koshi Basin was published in February 2018. Planned stakeholder dialogues to address developmental conflicts in the Basin (following on from the PEA) are yet to commence.</li> <li>Extensive consultations have increased understanding of community priorities and concerns for the Kamala Basin Planning initiative (CSIRO).</li> <li>Evidence of improved capacity within WECS with respect to IWRM, with the detailed methodology co-authored and presented by a senior WECS official at the 8th Asian Regional Conference of the International Commission on Irrigation and Drainage.</li> </ul>
<b>Collaborative structures for conservation agriculture-based sustainable intensification (CASI):</b>	Partially Achieved	<ul style="list-style-type: none"> <li>A Foresight approach has been adopted to help provide a long-term perspective on key drivers and trends food systems and the implications for water and energy use in the Eastern Gangetic Plains. The first Foresight workshop was held in Delhi in June 2018 and considered approaches for taking the work forward (ACIAR).</li> <li>The Assistant Secretary to the West Bengal State Minister of Agriculture visited project sites and held discussions with CIMMYT and ACIAR to discuss including CASI in state government programs. The Minister for</li> </ul>

Ganges Basin [Nepal, India & Bangladesh]		<p>Agriculture extended his full support to promoting the adoption of CASI technologies in other parts of West Bengal.</p> <ul style="list-style-type: none"> <li>• National Agricultural Research Systems partners from India, Nepal, Bangladesh and Pakistan have agreed to establish a Regional Collaborative Platform to promote and accelerate the adoption of CASI technologies.</li> <li>• Murdoch University (ACIAR partner) is in the process of testing two business models to sell Versatile Multi-Planters (VMPs). The project aims to promote small-scale mechanisation of planting operations and facilitate low interest loans for up to 80 per cent of the cost of machinery.</li> <li>• An external review found the SRFSI project had performed well in terms of gender inclusion, noting the high levels of active participation by women in field-level discussions (ACIAR).</li> </ul>
<b>Institutional capacity to initiate, steer and participate in medium – large scale hydropower] investment (may include PPP):</b> Ganges Basin [Nepal]	Partially Achieved	<ul style="list-style-type: none"> <li>• New Environmental Impact Assessment guidelines for the development of hydropower projects were approved by the Government of Nepal, and a study on local shares as a benefit sharing mechanism for hydropower projects in Nepal was completed (IFC).</li> <li>• Advisory services have been provided to several hydropower companies including Blue Energy, which resulted in them being able to acquire a generation license, negotiate a Purchase Power Agreement with the utility company, and progress with negotiations for a Project Development Agreement with the Government (IFC).</li> <li>• A multi-stakeholder workshop helped hydropower developers to understand cumulative impacts from hydropower projects, assess their associated risks and to learn how to conduct a Cumulative Impact Assessment. The workshop included 55 participants from different hydropower developers (IFC).</li> <li>• Preparatory work for the 100MW Super Trishuli Project was completed (IFC).</li> </ul>
<b>Knowledge base: water needs for agricultural production and energy generation:</b> Indus Basin [Pakistan]	Largely Achieved	<ul style="list-style-type: none"> <li>• Regional collaboration between decision makers, researchers, and practitioners through the Upper Indus Basin Network extended from Pakistan to include Afghanistan, and with a commitment to further extending participation to both India and China.</li> <li>• The Indus Forum Working Group drafted a joint research proposal on '<i>Understanding climate change adaptation in the Indus Basin</i>'.</li> <li>• Analysis conducted with University of Agriculture Faisalabad provided information on yield gaps and driving abiotic factors in the Punjab rice-wheat system, which will allow the Government of Pakistan to make better informed policies that integrate both agriculture and water considerations, particularly in Punjab (CSIRO).</li> <li>• A joint work plan between the Pakistan Institute of Development Economics and CSIRO has been developed and will explore the relationships between agricultural policies and land use dynamics in Punjab and Sindh.</li> <li>• A PEA on agricultural water use in the lower Indus Basin was completed (TAF).</li> </ul>



<p><b>Enabling policy and regulatory environment for energy investment (production and efficiency):</b> Brahmaputra and Ganges Basin [Bangladesh]</p>	<p>Partially Achieved</p>	<ul style="list-style-type: none"> <li>• Another four firms joined the Partnership for Cleaner Textiles (PaCT) program in Bangladesh, bringing the total number to 27. Five awareness raising sessions were held for these suppliers on cleaner production and solar rooftop opportunities (IFC).</li> <li>• A PEA on electricity trade and hydropower in eastern South Asia was completed (TAF).</li> </ul>
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## ASSESSMENT OF SDIP CONTRIBUTION TO SYSTEM CHANGE IN 2017-18

### Data and modelling capacity to facilitate IWRM: Indus Basin [Pakistan]

Aspects of change	Is positive change occurring?	Is SDIP contributing?	Evidence of system-wide change, SDIP contribution and/or positioning for future influence
<b>Aspect 1:</b> Routine use by planning departments (sub-national) of improved WR model/shared system generated data and analysis for strategic planning	Yes (but limited)	Yes	There is evidence that key government agencies in Pakistan are increasingly open to scientific research and data to support evidence-based decision-making. But there are still issues in terms of transparency and reliability of the available data, which makes it difficult for provincial governments to agree on how to manage shared water resources. SDIP partners (CSIRO) have installed a centralised hydrological data management system (Hydstra) across three provinces including Punjab, Sindh and Khyber Pakhtunkhwa, which has reportedly led to shifts in attitudes to data sharing between key agencies (including WAPDA) across these provinces. CSIRO also worked collaboratively with Government of Pakistan counterparts to develop the Indus River System Model.
<b>Aspect 2:</b> Growing cooperation between India, Pakistan [China & Afghanistan] on shared challenges of climate change and WRM.	Yes (but limited)	Yes	While evidence of formal cooperation between India, Pakistan, China and Afghanistan is limited, dialogue with respect to climate change and water resource management is strengthening. Key forums such as the Upper Indus Basin Network and the Indus Basin Knowledge Forum (supported by SDIP partners including SAWI and ICE WaRM) are attended by representatives from all 4 riparian countries and are considered to be positive forums for knowledge exchange. A joint research proposal developed by scientists from all four riverine Indus Basin countries on 'Understanding and assessing the impact of climate change in the Indus Basin' is being progressed.
<b>Aspect 3:</b> WAPDA has agreed common – routine data sharing platforms and protocols operating between provinces leading to greater [shared] confidence in [faster] decisions taken by WAPDA on where to build water infrastructure in Pakistan.	Yes (but limited)	Yes	The Chairman of WAPDA has committed to improving integrated hydrological data collection and management practices and there is talk of developing a national hydrological data centre. Installation of Hydstra in Punjab, Sindh and Khyber Pakhtunkhwa (CSIRO) has led to improvements in attitudes towards data sharing. The extent to which this has led to improvements in the quality and/or pace of decision-making seems limited at this stage.
<b>Aspect 4:</b> Recognition of gender and vulnerability within key policy documentation in Pakistan e.g. National Water Plan and related documents/ dialogue.	Yes (but limited)	Unclear	There has been some progress in this regard, most notably that Pakistan's National Water Policy explicitly states that women should be included in decision-making processes for WRM. However, there remains a lack of women in key roles within authorities that govern and manage the Indus Basin.

*Integrated practice [proven at scale] for cross-border water resource management: Ganges Basin, Kosi Basin [India & Nepal]*

Aspects of change	Is positive change occurring?	Is SDIP contributing?	Evidence of system-wide change, SDIP contribution and/or positioning for future influence
<b>Aspect 1:</b> Level of country-country cooperation on water-related disaster risk and flood management: increasing sharing and use of cross-border data	Yes (but limited)	Yes	There is some evidence of increasing dialogue, cooperation and coordination between governments for improved cross-border WRM, such as between Nepal and Bihar on issues of DRR and flood management and mitigation. Several SDIP partners are active in this space. For example, the Department of Hydrology and Meteorology in Nepal requested ICIMOD to support their monsoon flood forecasting with outputs from the Koshi flood outlook, while TAF has been supporting civil society and community level engagement on floods across the Bihar and Nepal border. SAWI has also been active, with its Flood Risk Atlas endorsed by the Central Water Commission in India.
<b>Aspect 2:</b> Content of the transboundary dialogue and agreements detailing water management arrangements integral to the protection of new hydro investments in Nepal (including water sharing, data sharing and management)	No	N/A	Despite localised examples of improved practice and information sharing, there is no evidence of a systemic shift towards the fundamental practices required for cross-border WRM in the Ganges Basin (including the Koshi). Hydropower developments in Nepal are progressing but they are not being implemented in the context of agreed water sharing arrangements with neighbouring countries. For example, while details for the development of the 6480 MW Pancheshwar hydropower project have been agreed between India and Nepal, there is not yet an agreement on water sharing arrangements.
<b>Aspect 3:</b> Practical use of modelling tools by stakeholders (beyond model development organisations) helping to generate a fresh perspective and agreed course of action on local WRM challenges affected by transboundary flows	Yes	Yes	There is high level support and engagement from key government stakeholders with respect to water modelling tools, and evidence they are being applied. SDIP partners (SAWI, CSIRO and ICE WARM) have provided capacity building to support water management agencies across the Ganges in river basin management and water resource planning. For example, the Kamala Basin Planning initiative includes the development of a river basin plan based on IWRM principles (CSIRO and ICE WaRM). In India, the Ganga River Basin Modelling suite and associated Water Information Dashboard was completed and transferred to India's Central Water Commission (SAWI). Modelling tools to support IWRM have also been developed for the Damodar Basin (SAWI).
<b>Aspect 4:</b> Extent to which flood management protocols and practice are responsive to gender and social inequity	Yes (but limited)	Yes	The Government of Nepal's National Water Policy explicitly recognises the importance of including women in consultations and planning for WRM. This follows technical support and capacity building from several SDIP partners including CSIRO and ICE WaRM. Gender-sensitive consultations have been conducted as part of the Kamala Basin Planning initiative (CSIRO), and as part of a study into the local benefit sharing mechanism for the hydropower sector (IFC).

*Collaborative structures for conservation agriculture-based system intensification (CASI): Ganges Basin [Nepal, India & Bangladesh]*

Aspects of change	Is positive change occurring?	Is SDIP contributing?	Evidence of system-wide change, SDIP contribution and/or positioning for future influence
<b>Aspect 1:</b> Intensity of the policy discourse [Eastern Gangetic Plains] towards encouraging higher private sector participation to support collaborative structures in agricultural marketing	No	N/A	Conservation agriculture-based system intensification (CASI) has shown great potential at small scale, but there are considerable barriers in scaling up across the region. Lack of access to new technologies, plus a weak enabling environment are major impediments to the adoption of CASI practices. Innovation Platforms – multi-stakeholder forums linking private, civil and public sector stakeholders – have been created to facilitate the scaling out of CASI practices. However, they do not appear to have been particularly effective to date. Engagement of the private sector in the scaling out of CASI practices is limited and the prospect of this changing seems remote for the foreseeable future given that private sector companies are not trusted by small scale farmers.
<b>Aspect 2:</b> Convergence of externally funded CASI initiatives with Government schemes	Yes (but limited)	Yes	There are opportunities to promote CASI practices through existing policy frameworks. For example, in Nepal, there is widespread commitment to implementing the Agriculture Development Strategy, which includes objectives and provisions that are well-aligned with CASI-based approaches. Similarly, in Bangladesh, the National Agricultural policy aims to make the nation self-sufficient in food through increasing production of all crops but has an increased focus on sustainability. In West Bengal, support has been given from the state's Agriculture Minister and senior officials to scale CASI practice approaches throughout the state.
<b>Aspect 3:</b> Policies (regional/ bilateral) and enhanced operations at existing border trade points for increased formal cross-border agricultural input-output trade and through this wider market stimulus	No	N/A	Trade policy regimes across the region remain highly protective. Most agricultural production is for domestic purposes; there is limited dependence on other countries for food security and therefore limited trade in farm goods or machinery (eg high tariffs are applied to these products, acting as a disincentive for trade). Intra-national trade barriers are often higher than inter-national trade barriers, with critical implications for livelihoods and food security within those countries. Market distortions hurt farmers and are an impediment to the widespread adoption of sustainable farming technologies and practices.
<b>Aspect 4:</b> Emergence of collaborative structures involving the private sector, informed by the specific needs of women farmers	Yes (but limited)	Yes	There is increasing recognition of the role of women in the agricultural sector, and there is some evidence that agricultural equipment and machinery is being designed to be 'women friendly'. New schemes have also been introduced offering financial assistance to women for the purchase of agricultural equipment. An external review of ACIAR's SRFSI project noted high levels of active participation by women in field-level discussions and project events.

***Institutional capacity to initiate, steer and participate in medium – large scale hydropower] investment (may include PPP): Ganges Basin [Nepal]***

Aspects of change	Is positive change occurring?	Is SDIP contributing?	Evidence of system-wide change, SDIP contribution and/or positioning for future influence
<b>Aspect 1:</b> Improved government capacity to manage medium - large hydropower project submissions and reach agreement with investors (including PPP)	Yes (but limited)	Yes	A lack of technical capacity and coordination across different parts of the Government of Nepal are just two of many constraints to the development of the hydropower sector in Nepal. However, there are signs of some progress. According to the Nepal Electricity Authority, more than 750 MW of electricity will be added to the national grid in 2018-19, with around 6 hydropower projects due to become operational over the period (including the 456 MW Upper Tamakoshi project). SDIP partners such as IFC are working closely with the Ministry of Energy and its Department of Electricity Development to build technical capacity and promote good international industry practices, particularly in terms of the structure of hydropower projects. This includes the financial arrangements (using a PPP model) for a hydropower project on the Karnali river.
<b>Aspect 2:</b> Investment community / private sector has greater clarity on government requirements for hydropower projects in Nepal (reflected in higher quality project designs being submitted for approval)	Yes (but limited)	Yes	The Government of Nepal has recently released a <i>Hydropower Environmental Impact Assessment Manual</i> , which outlines a series of guidelines relating to environmental and social standards for hydropower projects. SDIP partners were pivotal in the development of the guidelines. SDIP partners have also successfully been providing technical and advisory support to several private hydropower companies such as Blue Energy and Butwal Power Company, with Blue Energy subsequently able to acquire a generation licence and progress negotiations for a Project Development Agreement with the government.
<b>Aspect 3:</b> Reduction in the time for medium-large scale hydropower projects (including PPP) to be approved in Nepal.	No	N/A	Despite ongoing technical support to key government stakeholders there is little evidence of reduced approval times for hydropower projects.
<b>Aspect 4:</b> Gender equality issues are addressed within the (ex ante) social and environmental impact assessments for large renewable energy investments (including PPP) in Nepal.	Yes (but limited)	Yes	The recently released <i>Environmental Impact Assessment Manual</i> identifies the importance of engaging a range of stakeholders and conducting baseline studies to drive a better understanding of the impacts of proposed hydropower projects. This includes ensuring adequate representation of women and vulnerable groups in community consultations. The Government of Nepal also has a requirement that hydropower project developers distribute up to 10 per cent of financial equity/shares to communities affected by the hydropower project. However, a review of the local benefit sharing mechanism completed by IFC found a widespread lack of understanding of how the mechanism works and a lack of effective safeguards to reduce risk to investors, particularly for women and other vulnerable groups.

***Knowledge base: water needs for agricultural production and energy generation: Indus Basin [Pakistan]***

Aspects of change	Is positive change occurring?	Is SDIP contributing?	Evidence of system-wide change, SDIP contribution and/or positioning for future influence
<b>Aspect 1:</b> Institutional mechanisms at national and local level to analyse the interaction between food, energy, water and the environment	Yes (but limited)	Yes	New information and analysis is improving the evidence base for decision-making on water usage in the Indus Basin, although extensive knowledge gaps remain. There continues to be a high level of uncertainty around the volume of water available, with a changing climate impacting the rate of glacial melt and affecting the flow and availability of water at different times of the year. An important contribution from SDIP partners has been the development of the Indus River System Model (CSIRO), which has been endorsed by the SDIP Pakistan Strategic Advisory Group and which has strong potential to be a common water modelling framework for WRM in Pakistan. Importantly, the IRSM can be used to assess the impact of different climate change, water sharing and infrastructure development scenarios on river flows.
<b>Aspect 2:</b> Key capabilities at sub-national (provincial) level to respond to the questions that sufficiently granular data on water needs and use for agriculture will pose, including in relation to socio-economic assessments	Unclear	Unclear	Pakistan's National Water Policy establishes a governance framework for the effective management of water resources at the local, provincial and national levels. It includes a commitment to improve data collection and management practices and refers to the establishment of a national information database. However, the extent to which provincial governments have sufficient capacity to manage the implications of data and information as it is generated, including the trade-offs associated with decisions around the allocation of scarce resources, is unknown. SDIP partners have been providing technical support and capacity building to key government counterparts in Pakistan, including through the implementation of the Hydstra data management system across three provincial irrigation department. Other tools continue to be developed, however the extent to which they are being utilised in decision-making is unclear.
<b>Aspect 3:</b> Key decision-makers have an evidence-based understanding of climate change impacts in the Indus Basin	Yes	Yes	The HKH Assessment (ICIMOD) states that 36 per cent of the glaciers in the Hindu Kush Himalaya are forecast to disappear by 2100, even if global warming is limited to 1.5 degrees Celsius. The report concluded that the Indus Basin will be severely impacted, given that almost 80 per cent of the water in the Indus River is currently fed by snow and glacier melt. Rainfall patterns are also expected to become more uneven and extreme weather events more likely. Further to the HKH Assessment, CSIRO has been working with national partners to carry out research on water management techniques that can support adaptation to climate change.
<b>Aspect 4:</b> Factoring gender considerations into the enquiry and analysis on the quantification of water use and resources in agriculture	Yes (but limited)	Yes	The importance of women to the agricultural sector in Pakistan is increasingly being accepted, although women still largely remain excluded from decision making. SDIP partners are considering gender in relation to their work in Pakistan and are supporting local partners to do likewise, such as CSIRO's support for the University of Agriculture Faisalabad to design a research project to explore gender issues in groundwater management and the impacts on livelihoods of combined surface and groundwater-use decisions.

*Enabling policy and regulatory environment for energy investment (production and efficiency): Brahmaputra & Ganges Basin [Bangladesh]*

Aspects of change	Is positive change occurring?	Is SDIP contributing?	Evidence of system-wide change, SDIP contribution and/or positioning for future influence
<b>Aspect 1:</b> Shift in the regulatory framework in Bangladesh to support improved access to electricity (including through increased domestic production and/or imports).	Yes	No	Bangladesh is facing an energy crisis, with domestic demand for energy increasing at the same time as domestic natural gas reserves decline. It has large coal reserves, however local opposition means they are unlikely to be developed. Bangladesh has been actively looking to broaden its energy supply through imports. It recently signed a MoU to build a 130 km oil pipeline between Parbatipur in the Dinajpur district of North Bangladesh and Siliguri in West Bengal, which could lead to up to a million tonnes of Indian oil flowing across the border each year. It has also expressed interest in buying 500 MW of power from the proposed Upper Karnali hydropower project in Nepal. SDIP partners are not working directly on improving the regulatory environment but are supporting the 'readiness' of private sector companies to invest in new solar and hydropower projects within the existing regulatory framework. SDIP partners are making strong contributions to improvements in energy efficiency, including in the textiles sector.
<b>Aspect 2:</b> Greater clarity on the standards and guidelines that underpin energy efficiency programs in Bangladesh.	No	N/A	Government institutions such as the Sustainable and Renewable Energy Development Authority (SREDA) have oversight of energy efficiency programs in Bangladesh. However, although the importance of improving energy efficiency is increasingly recognised as a solution to improve energy access, there is limited evidence of greater consistency around standards and guidelines, and enforcement remains weak. In previous years, SDIP partners have developed a website to benchmark water and energy efficient equipment for the textile industry. The website is intended to help financial institutions find efficiency related information for equipment suppliers and facilitate approval of resource efficiency financing proposals.
<b>Aspect 3:</b> Improved access to finance to fund infrastructure that would support energy production and improved energy efficiency in Bangladesh.	Yes (but limited)	Yes	Access to finance in Bangladesh remains tight and is considered one of the key barriers for significant improvements to energy access (for example, considerable finance is needed to build infrastructure to induct imported coal and gas into Bangladesh's power sector supply). In recent years significant gains have been made at the household level (particularly in rural areas) through the rollout of off-grid solar programs. SDIP partners are working at the firm level in the textiles industry to support improvements in energy efficiency. In particular, through the PaCT program, IFC is working to introduce and grow rooftop solar PV as a sustainable and commercially feasible source of energy for the textile industry.
<b>Aspect 4:</b> Energy access reforms take account of the specific needs of vulnerable groups including women and girls	No	N/A	There is limited evidence that energy access reforms are specifically accounting for the needs of women and girls. However, energy access programs being implemented in Bangladesh by development partners, such as increased rural electrification (off-grid solar), are benefitting women and girls. SDIP partners are also working in the textiles sector in Bangladesh, where the majority of workers (65-85 per cent) are female.

## Part 3 – Institutional Strengthening

### Partner progress improving monitoring and evaluation systems and practice

SDIP partners are considered, overall, to have made some progress in strengthening their monitoring and evaluation systems and practice. Results reported in partner annual reports were often at the outcome level, and outputs were more frequently couched in terms of the overall context in which they were delivered. Good progress was made reporting gender-related outcomes and outputs, and results data is increasingly disaggregated by gender. An area for ongoing attention for all partners is an assessment of the *adequacy* of progress delivering outputs/outcomes against what was expected. An assessment of progress for each partner in 2017-18 is outlined in Table 4 below.

**Table 4: Partner progress towards improving monitoring and evaluation systems and practice**

Partner	Outcomes reporting providing robust, evidence based, annual assessment of progress against relevant SDIP2 outcomes (fit for purpose for partner) ✓ to ✓✓✓✓		Assessment of progress towards PAF 2018 milestone <sup>59</sup> (→ maintaining practice/minor improvements) (↑ improving practice)
	Assessment 2016-17 <sup>60</sup>	Current orientation: 2017-18	
ACIAR	✓✓	✓✓ External review clearly identifies good progress made on the SRFIS project. Reporting is oriented to the SDIP monitoring framework but results still largely at the output level.	→
CSIRO	✓✓✓	✓✓✓ MEL efforts have focused on linking project activities to SDIP2 outcomes. Evidence of progress at the outcome level is clearly presented. Reasons for lack of progress are considered.	↑
ICE WaRM	✓✓✓	✓✓✓ Reporting is oriented to the SDIP monitoring framework. Clear evidence of progress at the output level, less so at the outcome level.	→
ICIMOD	✓✓	✓✓ Detailed reporting but still oriented towards outputs. Evidence of improvement assessing progress against own mandate, and reasons for lack of progress are provided.	↑
IFC	✓✓	✓✓✓ Contribution to SDIP2 outcomes is clear, with solid evidence and context for results achieved. Future opportunities and potential results are well-considered.	↑
SAWI	<i>To date, no structured engagement of IOD PARC with SAWI (the World Bank) on their internal commitment to strengthen M+E practice</i>		N/A
TAF	✓✓	✓✓ TAF has aligned activities (outputs) to SDIP2 outcomes, but program-level outcomes are not yet articulated and so progress against what was expected is unclear.	→

<sup>59</sup> PAF Milestone 2017-18: Partner monitoring provides – where relevant - a robust annual assessment of progress against the three SDIP2 outcomes

<sup>60</sup> Four-point scale: outcomes reporting 'fit for purpose' for the partner: ✓ to ✓✓✓✓



**Partner progress improving the integration of gender equality and women's empowerment into programming**

In 2017-18, there is evidence of strengthened integration of gender into SDIP2 design, programming and monitoring, although further progress is needed. Building on organisational strategies and commitments developed in 2016-17, partners have developed specific strategies/action plans to better enable mainstreaming across all (ICIMOD, CSIRO) or selected (SAWI, IFC) SDIP activities. Other partners' institutional commitment is evident through capacity building of staff and evidence of increased gender mainstreaming within programming. Structural shifts are also evident through changes in governance and expertise (ACIAR). Table 5 summarises partner efforts to strengthen GEWE based on evidence available in their annual reports.

**Table 5: Efforts to strengthen GEWE integration across programming (2017-18)**

Partner	Evidence of effort applied to mechanisms for integrating GEWE <sup>61</sup> 2017-18				
	Organisational strategy and resourcing <sup>62</sup>	Programming			
		Gender analysis informs design	Gender mainstreamed into programming	Analysis and learning, reflected in robust reporting on GEWE results	Strengthening M&E practice
ACIAR	✓✓	✓✓	✓✓✓	✓✓	✓✓
CSIRO	✓✓✓	✓✓	✓✓✓	✓✓✓	✓✓✓
ICE WaRM	✓✓	✓	✓✓✓	✓✓	✓✓
ICIMOD	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓
IFC	✓✓	✓	✓✓	✓	✓✓
SAWI	✓✓	✓	✓✓	✓	✓✓
TAF	✓	✓✓	✓✓	✓	✓

In 2017-18 there was evidence across *all* partners of strategic efforts to mainstream gender across more intervention areas,<sup>63</sup> some reflection on gender issues, and ongoing strengthening of M&E practice through improvements to program logic, data collection or reporting (including against SDIP2 GEWE indicators).

However, robust reporting on and analysis of GEWE results, including in relation to programming and lessons learned, was limited. Partners continue to acknowledge the difficulties in mainstreaming gender in their work and recognise that it is a long-term process both for themselves and their counterparts.

<sup>61</sup> Overview based on a 3-point scale (✓-✓✓✓), reflecting levels of effort to which partners have implemented and institutionalised GEWE into programming based on 2017-18 Annual Reporting. ✓ = evidence of some (limited) effort, ✓✓ = evidence of increasing effort, ✓✓✓ = evidence of strong effort.

<sup>62</sup> Assessment considers strategies and operational guidance, institutional capacity, resourcing and agency.

<sup>63</sup> Gender mainstreaming identified in 2017-18 reported outputs and outcomes as follows: ACIAR = 50%, CSIRO = 70%, ICE WaRM = 100%, ICIMOD = 70%, IFC = 30%, SAWI = 30%, TAF = 63%

### Partner progress leveraging Australia's diplomatic presence

Throughout 2017-18 there were numerous cases where Australia's diplomatic presence was used to promote Australia's profile and reputation within the region.

Specific examples include:

- In **Afghanistan**, representatives of the Australian High Commission (AHC) and ICIMOD supported the connection between SWaRMA in Afghanistan and Afghanistan's Water Donor's Coordination meeting (WDCM) organised by USAID. The AHC in Kathmandu and in Delhi have also supported Australian engagement in SWaRMA.
- In **Bangladesh**, the High Commissioner to Bangladesh showed her support for ACIAR's work and attended several events, including an Australia – Bangladesh agricultural showcase. The Bangladeshi Agriculture Minister also participated in the showcase and lauded the efforts made by ACIAR and partners in promoting sustainable agriculture.
- In **India**, assistance from the AHC (including Austrade) in New Delhi supported ICE WaRM to facilitate a relationship between the World Bank's National Hydrology Project (NHP) and the Australian Water Partnership (AWP), which links Australia with a significant national level project (the NHP) with only a modest commitment of resources.
- In **India**, the Australian High Commissioner visited SRFSI project sites in Cooch Behar, West Bengal and interacted with local partners and farmers. She also met with the West Bengal Chief Minister, Mamta Banerjee to help promote ACIAR's SDIP efforts and was assured of full support by the State government.
- In **Nepal**, the Australian High Commission played a key role in securing the participation of the Minister for Energy and other high-level officials from the Government of Nepal in a high-level study program to Australia led by ICE WaRM, providing an opportunity to share Australia's knowledge and expertise in hydropower and our unique approach to energy markets.
- In **Nepal**, the Australian High Commissioner has continued in the role as co-chair for the JAC (Nepal-Australia Joint Advisory Committee on Water Resources Management) and as Chair of the ICIMOD Support Group (which includes representation from ICIMOD's eight regional member countries and the development partners providing support).
- In **Pakistan**, the Australian High Commission facilitated several opportunities for CSIRO to share Australia's expertise in water resource management with key government stakeholders. For example, the SDIP Indus team presented their work to the Punjab Planning Minister, Secretary and Planning and Development and participated in the Australia-Pakistan Joint Trade Meeting in Canberra (at the invitation of DFAT). The AHC also hosts 'chai and chat' meetings of water-related development partners and engages strongly with various water-food-energy-environment-climate change Ministries, the judiciary and CSOs.

### 3. Cross-cutting issues

#### Gender Equality and Women's Empowerment

**The SDIP2 PAF provides a framework for tracking the extent to which there is evidence of progress on gender equality issues** through the partner experience across the three basins and within the different SDIP2 outcome areas of practice, knowledge and enabling environment.

In 2017-18 SDIP partners have continued to deepen their understanding of gender equality issues *within the contexts in which they work*, and to reflect this learning in project design and implementation, and in their engagement with stakeholders. Where partners are sighted on the conditions that enable gender equality, and there has been longer term engagement, there is some evidence that gendered outcomes are emerging. **In coming years, there is an expectation that partners will provide robust evidence of the impact of their efforts to strengthen gender equality** through capacity building, technical and policy support.

#### ***GEWE Result 1: Participation of women (and institutions representing women's issues) in key forums and/or influence of gender on policy discussions***

**During 2017-18, all partners were able to demonstrate some meaningful participation of women, or representation of women's issues** in resource management activities and/ or policy engagement. There is evidence of greater partner effort to build understanding of relevant gender inequalities amongst stakeholders with whom they work; this is critical to enabling more gender-responsive engagement by SDIP partners.<sup>64</sup> This year, partners sought to increase representation of women and gender issues through building linkages between gender experts and other technical experts,<sup>65</sup> through greater representation of gender perspectives in technical forums<sup>66</sup>, and through gender-sensitive consultation with key stakeholders of water, energy and food security.<sup>67</sup> There is some evidence of progress towards outcomes (and since 2016-17), such as integration of inclusive consultation into Kamala Basin planning, inclusion of women's role in water resources management within the Action Plan for the Northeast (India), and identification of gendered benefits from SPIPs. Partners continue to deepen their understanding of the complex challenges in achieving meaningful participation of women,<sup>68</sup> and to explore mechanisms to achieve better representation of gendered issues, including in relation to modelling, policy engagement and capacity building.

#### ***GEWE Result 2: Opportunities for civil society voice, including through women's groups, to contribute to/engage meaningfully in policy dialogue***

**Five out of seven partners have provided opportunities for civil society to contribute meaningfully to policy dialogue and extend the 'reach' of SDIP.** In 2017-18 there is evidence that new and ongoing partnerships with civil society are contributing to scaling out successful resource management

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<sup>64</sup> Kadel et al. (2017) Making Gender Count, p.7 *Gender definitions*

<sup>65</sup> For example, through the Regional Workshop on Gender, Water and Agriculture organised by ACIAR in Delhi, and CSIRO collaboration with multiple institutions (UAF and PID in Pakistan, BAU in Bangladesh and PEI/JVS in Nepal) to build capacity in gender analysis, strengthen knowledge and data and enable access to education/ research opportunities.

<sup>66</sup> For example, within the Upper Indus Basin Network and the HKH Resilience Forum supported by ICIMOD, the Brahmaputra Dialogue and Northeast India Water Resources Workshop supported by SAWI, and the Himalayan University Consortium [water leadership] Programme supported by ICE WaRM and ICIMOD

<sup>67</sup> For example, gender-sensitive consultation with communities in the Kamala basin supported by CSIRO and in relation to local benefit-sharing supported by IFC, establishing gender-inclusive provincial water groups in Sindh with support of TAF.

<sup>68</sup> Discussions of challenges are reported in 2017-18 annual reports

practices,<sup>69</sup> development of more gender responsive approaches,<sup>70</sup> and delivering positive outcomes for women.<sup>71</sup> Partners also continue to support civil society to effectively engage and contribute to policy dialogue.<sup>72</sup> SDIP partners continue to work in partnership with academic institutions, including those who provide gender expertise.<sup>73</sup> One SDIP partner explicitly acknowledges the potential role of ‘other institutions’ in maintaining the sustainability of multi-stakeholder dialogue events.<sup>74</sup>

***GEWE Result 3: Regional DRR strategies and early flood warning systems increasingly accommodate and directly address the differential impacts and needs of women and men***

Both partners directly engaged in DRR and flood warning have sought to ensure that flood warning systems address the differential needs of women and men. Key achievements of 2017-18 are the continued out-scaling and utilisation of gender-sensitive flood warning systems (CBFEWS, FRA and Bihar Flood Modelling) in the region, further progress towards building more gender-responsive FEWS and disaster management plans<sup>75</sup> and establishing mechanisms to ensure the voices of women and marginalised communities will be heard in addressing flood-related conflict.<sup>76</sup>

***GEWE Result 4: Gender lens is applied to knowledge products (institutional and technical) generated by partners/ Progress in addressing gender-related gaps in current knowledge and approaches***

In 2017-18, all partners applied a gender lens to one or more learning products or processes; there is some evidence that a gender lens is being applied with increasing frequency across partners, with important innovation into ‘addressing gender-related gaps’ in current knowledge. This year has seen the publication or updating of key knowledge products<sup>77</sup> and operational guidance<sup>78</sup> prepared in 2016-17, with some evidence that they are being utilised to inform engagement and/ or to build capacity and support learning.<sup>79</sup> In addition, new/ ongoing research is being undertaken.<sup>80</sup> This research and guidance will form the basis for partners’ future engagement in a range of areas (including within hydropower development, early warning systems, multi-stakeholder dialogue processes and basin

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<sup>69</sup> For example, UNDP has funded ICIMOD’s project implementation partner WWF with USD 500,000 to out scale agriculture water management and innovative technologies to eight additional districts of Gilgit-Baltistan

<sup>70</sup> For example, within Kamala Basin planning, through CSIRO collaboration with JVS and PEI

<sup>71</sup> An external review of SRSFI, delivered by ACIAR and its partners, found evidence of major advancements in gender empowerment and mainstreaming, in Rola-Rubzen et al. (2018)

<sup>72</sup> For example, civil society engagement in the 2nd and 3rd Indus Basin Knowledge Forums contributed to shaping and actioning a 10-point plan aiming to ‘strengthen the Indus Basin knowledge landscape and build opportunities for knowledge sharing and co-development’. Civil society is also represented in the Provincial Working Group for Sindh supported by TAF.

<sup>73</sup> For example, Bangladesh Agricultural University are working with CSIRO, and ICE WaRM collaborates with TERI SAS in Guwahati to deliver its co-developed course on ‘Gender Equity in water resources management’.

<sup>74</sup> SAWI Annual Report 2017-18

<sup>75</sup> ICIMOD supported gender-sensitivity training for FEWS stakeholders from Afghanistan, Nepal, India and Pakistan, and updated the CBFEWS with Telemetry Resource Manual to integrate gender and social analysis as an integral part of risk, vulnerability, and capacity assessment. It will also support gendered disaster management planning through its partnership with the Bihar State Disaster Management Authority.

<sup>76</sup> Through Kosi dialogues supported by TAF

<sup>77</sup> For example, HKH Assessment (ICIMOD), PEAs in Kosi, Indus and Brahmaputra (TAF), and Inventory of benefit sharing mechanisms in hydropower (IFC and ICIMOD)

<sup>78</sup> For example, Guidelines for the Development of Hydropower in Bhutan (SAWI), and updated CBFEWS Telemetry Resource Manual (ICIMOD)

<sup>79</sup> For example, the Indus PEA (TAF) has informed the nature and design of inclusive nexus working groups in Pakistan; the ‘Mainstreaming and modelling’ report (CSIRO) seeks to support engineers and modellers working to bring a gender ‘lens’ to water modelling practice; the Sundarbans Blue Economy study (SAWI) is informing larger World Bank lending operations in the region.

<sup>80</sup> For example, a study to understand socio-economic and gender impacts of water access (BAU supported by CSIRO), and a study on the role of women in agriculture across the EGP (SaciWATERS supported by ACIAR)

planning). Partner experience and expertise has also supported capacity building<sup>81</sup> and learning.<sup>82</sup> As knowledge products are increasingly utilised within SDIP and beyond, it is anticipated that partner reporting will contribute to a greater understanding of how knowledge products informed more gender-responsive approaches to water, energy and food management/ decision-making, including as a result of capacity building.

***GEWE Result 5: Collection of sex-disaggregated data, helping to address the paucity of such data in the region***

All SDIP partners report some gender disaggregated data, with evidence that 4/7 partners<sup>83</sup> routinely collect and interpret gender disaggregated data across the work that they engage in. In 2017-18 there is also evidence of a shift, *amongst some partners*, in monitoring practice. Whilst the majority of partners continue to track participation of women and men (for example in capacity building and dialogue events), some partners are actively working to build their capabilities in tracking differential ‘conditions’ of men and women,<sup>84</sup> and some early evidence of gendered outcomes are emerging.<sup>85</sup> In coming years, there is an expectation that more partners will systematically track gender-differentiated conditions related to the work they are doing and generate robust, accessible data that is utilised to strengthen resource management.

***GEWE Result 6: Improved set of inter-related conditions for resource management capacity from national through to municipal levels, increasingly address women and men’s differentiated needs in terms of access to water and energy, especially for agricultural (food) purposes.***

As in previous years, partners (6/7) supported capacity building – either of women directly to support their resource management capabilities<sup>86</sup> and/or of both men and women to support their understanding of how gender should be considered and incorporated into water-food-energy management systems. The latter has been achieved through strengthening technical partnerships and networks<sup>87</sup> and delivering courses accessible to key water resource managers and the wider public.<sup>88</sup> Training opportunities in 2017-18 were extended to communities, government and private sector partners,<sup>89</sup> and evidently builds on SDIP experience in recent years. One SDIP partner stated that as a result of community engagement and capacity building ‘Government of Nepal officials indicated [...]

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<sup>81</sup> For example, technical training of women scientists and entrepreneurs (supported by CSIRO, SAWI, IFC), and training of water management and agriculture specialists in gender equality (supported by ICE WaRM, SAWI, CSIRO)

<sup>82</sup> For example, ACIAR study on the ‘impact of gender mainstreaming and inclusion strategies’, and the Gender Portal for the Koshi River Basin

<sup>83</sup> For example, CSIRO, ICIMOD, ACIAR, ICE WaRM

<sup>84</sup> For example, Gender Portal for Koshi River Basin (ICIMOD), research on agriculture-related decision-making and gender outcomes (CSIRO and University of Faisalabad), and Gender Mapping (SAWI)

<sup>85</sup> For example, livelihood benefits from SPIPs, and ongoing research to understand the effects of SPIPs on gender empowerment (ICIMOD)

<sup>86</sup> For example, SAWI supported 38 women to participate in WRM-related training, ICE WaRM provided training for 3 women through the South Australia Water Management Fellowships, IFC supported 75 women QC control personnel to be trained in efficiency skills development

<sup>87</sup> For example, CSIRO support to faculty and students of Bangladesh Agriculture University in gender-research

<sup>88</sup> For example, HLSPs in Nepal and Rajasthan, and Gender Equity and Water Resource Management at TERI University (ICE WaRM), delivering gender-sensitivity training to users of CBFWS to government representatives, civil society members, and community members from Afghanistan, India, Nepal, and Pakistan (ICIMOD), development of training modules in water diplomacy and basin management (IUCN/ SAWI)

<sup>89</sup> For example, IFC supported four participants from hydropower companies to attend the regional Gender and Hydropower training in Myanmar

*improved [...] understanding of how water management decisions can affect men and women differently’.<sup>90</sup>*

***GEWE Result 7: Gender is meaningfully considered and increasingly incorporated in the development of water-food systems, and energy policies and regulations, at sub-national, national and regional levels***

2017-18 has seen significant progress in terms of the policy environment for *gender-responsive* water-food-energy systems, to which SDIP partners have contributed through their engagement in the region over the last 6 years. Both the Pakistan and Nepal National Water Policies<sup>91</sup> were enacted and recognise explicitly the importance of including women in WRM decision-making. In addition, formal guidelines for hydropower development incorporating social and environmental guidelines, were approved by both the Governments of Nepal and Bhutan<sup>92</sup>. Integration of gender into the Kamala Basin Planning initiative provides an early indication of a supportive enabling environment in Nepal. In Northeast India, the important role of women in water resources management has been included in the Action Plan for the Northeast following technical support provided by SAWI to the government.

## Climate Change

### Progress in context

**The water-energy-food nexus is a key concept that underpins the work being undertaken by SDIP partners.** A nexus perspective recognises that water-energy-food sectors are strongly linked, with policy decisions and management approaches in one sector having a direct impact on the others (ie food production requires water and energy, energy production requires water).

**The challenges around the effective management of natural resources in South Asia, including nexus considerations, are exacerbated by the impact of climate change.** For example, the recent HKH Assessment found that even if global warming is kept to 1.5 degrees Celsius, the Hindu Kush Himalaya region is expected to face significant biodiversity loss, increased glacial melting, and less predictable water availability.

**SDIP partners are working directly to reduce greenhouse gas emissions (climate change mitigation) and to build resilience to the impacts of climate change in the region (climate change adaptation).** There is also evidence that SDIP partners are increasingly applying a climate change lens to all their investments. For example, climate change considerations have been applied to investments that support more effective river basin planning, noting that future river flows are expected to become more variable due to higher glacial melt rates and more extreme precipitation events. Similarly, climate change considerations have shaped SDIP investments that aim to improve resource efficiency, such as in the textiles industries in Bangladesh and Pakistan.

**The effectiveness of SDIP partner efforts to promote climate change mitigation and adaptation is considered each year through the application of five discrete measures, which together form the climate change component of the SDIP PAF.** The key results achieved in 2017-18 by SDIP partners for each of the five performance measures are summarised below.

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<sup>90</sup> CSIRO Annual Report 2017-2018

<sup>91</sup> Pakistan’s National Water Policy (2018), Nepal’s National Water Policy (2017)

<sup>92</sup> Hydropower Environmental Impact Assessment Manual approved by Government of Nepal in August 2018, Guidelines for the Development of Hydropower, approved by Royal Government of Bhutan in June 2018



### **CC Result 1: Measures that increase resilience to climate change and climate variability**

**In 2017-18, SDIP partners reported good progress on measures to increase resilience to climate change and climate variability.** Efforts were focused on measures to build capacity for more integrated approaches to water resource management, the implementation of community-based flood mitigation measures and early warning systems, and research and capacity building to build understanding of the linkage between water and food resilience.

**Technical support and capacity building delivered by CSIRO and ICE WaRM may have had some influence on the Government of Pakistan's National Water Policy (NWP), released in 2018.** Climate change considerations are integral to the NWP, which recognises the importance of preparing for extreme weather events such as floods, prolonged droughts and heat waves. An effective response to climate change is also central to the Government of Nepal's National Water Policy (released 2017), with these policy objectives now being integrated into the Kamala Basin Planning initiative.<sup>93</sup>

**Community-based flood early warning systems developed by ICIMOD have been successfully trialled in Nepal, downstream Bihar (India), and Pakistan.** There is strong evidence that they are being applied, saving lives and reducing the financial cost of flood events. ICIMOD is now leading a pilot of these systems in Afghanistan.<sup>94</sup>

**Research and capacity building in climate smart agricultural techniques is also building resilience to climate change and climate variability.** For example, ACIAR continues to build capacity to enable a better understanding of how climate change impacts regional food security, including through its 'Foresighting' work.<sup>95</sup> In 2017-18, an additional 4,651 hectares of land was converted to CASI-based farming systems, benefiting 17,982 farmers (3,984 women).

### **CC Result 2: Measures that mitigate greenhouse gas emissions**

**In 2017-18, the key result achieved by SDIP in terms of contributing to lower greenhouse gas emissions was the finalisation by IFC of a Public Private Partnership (PPP) for the 750 MW Rewa Ultra Mega Solar project in Madhya Pradesh, India.** The agreement paves the way for construction of the project to commence, which will reduce CO2 emissions by approximately one million tonnes per year once it is operational.

**Resource efficiency initiatives supported by IFC in 2017-18 are estimated to have reduced greenhouse gas emissions by 106,036 metric tons.**<sup>96</sup> Resource efficiency measures were delivered at both the firm and the sector level, with good progress made in Bangladesh and Pakistan in the textiles industry (through the Partnership for Cleaner Textiles (PaCT) program). Besides textiles, IFC provided resource efficiency advisory services for firms in several other sectors including agriculture, cement, chemicals and construction. An estimated 21.5 million metres<sup>3</sup> of water and 2.5 million MWh of power is being saved per year.

**Through IFC's 'Lighting Asia' program, an additional 5.3 million people in India gained access to affordable off-grid solar energy lanterns in 2017-18,** taking the total for SDIP2 to 18 million people and reducing greenhouse gas emissions by over 100,000 tonnes. An evaluation of the program found that solar lanterns had a significant positive impact on educational and economic parameters among

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<sup>93</sup> ICE WARM Annual Report 2017-18

<sup>94</sup> ICIMOD Annual Report 2017-18.

<sup>95</sup> ACIAR Annual Report 2017-18

<sup>96</sup> IFC Annual Report 2017-18

beneficiary households, and that there was a significant decline in the number of households using kerosene as the primary source of fuel for lighting.

**With support from ICIMOD, solar powered irrigation pumps installed in four districts in Nepal are estimated to have reduced greenhouse gas emissions by approximately 16 tonnes in 2017-18.**<sup>97</sup> This is based on emissions reductions from 23 pumps installed in 2017, with another 30 pumps installed in 2018 (emissions reductions from all 53 pumps will be included in the 2018-19 report).

**ACIAR will continue field-level scaling of CASI approaches for small-scale farmers, which have been demonstrated to improve resource efficiency, decrease emissions and increase carbon storage in the soil.** Detailed estimates of greenhouse gas emission reductions will be available in 2018-19.

### **CC Result 3: Improved flows of climate change information to decision makers and their use of this information**

**SDIP partners have worked with senior decision makers in Pakistan, Nepal, India and Bangladesh to promote climate awareness in basin planning and water management.** For example, CSIRO and ICE WaRM have been working with key government stakeholders in Pakistan to explore different options for integrating climate change into water resource planning tools. In Nepal, technical assistance has led to climate change being mainstreamed into basin planning processes, including the Kamala Basin Planning initiative. Water modelling tools and flood outlook systems developed with the support of SDIP partners are being used on a daily basis, including the Governments of Nepal (DHM) and Bihar (DMD and WRD).

**SDIP partners have made a strong contribution to the available knowledge base regarding the impact of climate change.** Key knowledge products completed in 2017-18 include ICIMOD's contributions to the HKH Assessment, CSIRO's regional study on future run-off trends (which builds understanding of the impacts of climate change on water resources in South Asia), and TAF's PEAs, which include insights on the extent to which politics and institutions influence resilience to climate change and climate variability in South Asia.

**There is growing evidence that new knowledge of the impact of climate change is informing policy dialogue at the national and regional level.** Knowledge exchange on climate change has been evident through platforms such as the *'Resilient Hindu Kush Himalaya: Developing Solutions towards a Sustainable Future for Asia'* conference in December 2017, which brought together more than 200 experts from around the globe. Furthermore, a joint research proposal *'Understanding and assessing the impact of climate change in the Indus Basin'* was developed through the Indus Basin Working Group and included participation from all riparian countries including Afghanistan, China, India and Pakistan. A climate change symposium was included in the 8th International Commission on Irrigation and Drainage – Asian Regional Conference in Kathmandu, May 2018, which included participation from senior officials from across the region and engendered strong debate and broadened perspective on climate change impacts across the region. In late 2017 the fourth *Climate Business Forum* was held in New Delhi, an event that brought together business leaders in banking, energy, agribusiness, and climate-related sectors. This conference significantly expanded the knowledge base on innovative climate smart technologies.

### **CC Result 4: Integrating Climate Change into Partner Institutional Practices and Processes**

**All SDIP partners reported on activities that support climate change resilience and noted that climate change considerations were embedded within the delivery of their programs.** While not all

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<sup>97</sup> ICIMOD Annual Report 2017-18



partners reported directly against the five key result areas, reporting highlighted the areas that the partners felt were most effective/relevant to climate change.

**ICIMOD is the only organisation that reported on its own efforts to integrate climate change considerations into internal practices and processes.** ICIMOD is one of the few organisations in Nepal with an agreement with the Nepal Electricity Authority to supply its surplus solar power to the national grid. ICIMOD has also undertaken initiatives at its office to enable ground water recharge, eliminate plastic waste from bottled water and are planning to rationalise travel to reduce carbon emissions.

#### **CC Result 5: Leveraging Private Sector Finance for Adaptation and Emissions Mitigation**

**IFC's investments in the solar industry have successfully leveraged private sector finance for the mitigation of greenhouse gas emissions.** For example, in India, negotiations for the 750 MW Rewa Ultra Mega Solar PPP in Madhya Pradesh led to the mobilisation of USD 2.1 from commercial lenders for each USD 1 loan by IFC, and private investment of USD 576 million. The government is now seeking to replicate the success of Rewa in at least three other parts of the country.<sup>98</sup>

**IFC is laying the groundwork for the mobilisation of private sector finance for the development of hydropower projects.** For example, in Nepal, IFC has held discussions with the Ministry of Energy to implement a hydropower project on the Karnali river in Kalikot district in the Far Western Development Region of Nepal through a bankable and sustainable PPP model.

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<sup>98</sup> IFC Annual Report 2017-18

## 4. The portfolio and partnership modality

SDIP is an integrated program, drawing on both development and political/economic expertise for its implementation, underpinned by a twinned portfolio and partnership approach.

**A key foundation to the approach is that in complex settings and when dealing with complex problems, it is not possible to know definitively what intervention or sets of interventions will work at the outset.** So working with very experienced partners, building in annual reflection and learning and providing flexibility to adjust programming is critical.

**The second foundation is that Australia's missions (Posts) have a critical engagement and influencing role in a government to government setting.** Thus, Posts need to be drawn into the program as key agents of change.

### **Centrality of the portfolio and partnership approach to the SDIP design**

**SDIP is designed as a portfolio of investments or investment partners.** It is underpinned by a 12-year strategy with three phases of financial investment from DFAT. Each phase provides an opportunity for DFAT to tighten the focus for impact and, where necessary, to recalibrate the mix of investments and the geography of the investments. The fact that the strategy is designed for 12 years – and that partners chart a program to serve the overall portfolio objectives – reduces the need for an extensive design period at the start of each phase and ensures that momentum is maintained. It also supports trust building in the region, as partners are considered to be committed to the long term.

**For DFAT, the portfolio approach is analogous to being the manager of a superfund.** DFAT selects a 'portfolio' of partners to generate an integrated development/political/economic return; and to stimulate non-traditional collaborations and the opportunity for innovation. Portfolio partners are provided with earmarked core funding to select activities in their core areas of expertise, however, partner investments must align with partner government imperatives and areas of Australian niche expertise and experience: integrated water resource management; climate resilient sustainable agriculture; energy access; large-scale renewables and resource efficiency measures.

**The unit of management moves away from activity management, towards supporting a range of partners who because of their mandate, positioning, expertise and performance, can influence a desired outcome for Australia's interests in the region.** DFAT's attention is refocused to a more strategic, policy, outcomes level, and the approach leverages Australia's diplomatic presence in the region. For example, in Pakistan and Nepal, building on the success of partners and their interventions over the past six years combined with Australia's diplomatic support and steerage, the nature and scope of the relationships have moved to Government-to-Government MOUs. Australia is considered a trusted partner in supporting the intersection between water-energy-food systems.

**The risks to the portfolio approach (ie a partner not aligning with intent, mis-using funds or acting competitively rather than cooperatively with other partners) are mitigated by a due diligence process in the choice of partners prior to their selection. It is further mitigated by applying a structured and deliberate partnership approach<sup>99</sup> to the way partners work with DFAT and amongst themselves.**

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<sup>99</sup> The 'partnership approach' uses frameworks developed by the Partnership Brokers Association, and is premised on the principles of diversity, mutual benefit/accountability, equity, openness and courage (to do business differently). In SDIP It is structured to include the joint development of a 'ways of working document' which is then used as a basis for review of the partnership annually at the health check with each partner and DFAT. Further formal collaboration opportunities are

The **partnership approach** recognises that solutions to complex and intractable issues (such as rising water, energy and food insecurity) requires cross sectoral/multi-stakeholder collaborations of diverse but aligned organisations, contributing from their realms of strength, and that these are optimised by working to agreed shared objectives, while at the same time recognising individual partners may have different (though aligned) drivers. The acknowledgement and achievement of individual objectives is fundamental to the success and sustainability of the partners' engagement – there has to be enough mutual benefit for partners to stay engaged.

**Genuine commitment to working in a principled manner, focusing on mutual benefit/accountability, a commitment to equity and openness, and a respectful manner is key:** it engenders an environment of 'no surprises' and collaborative problem solving, and delivers substantial value-add beyond original expectations for all partners involved. It also provides a common language and framework for SDIP partners to engage with each other on spin-off collaborations, and this is very much in evidence.

**Authentic partnership actively moves away from the more traditional contractor–service provider model, recognising this can lead to a power imbalance which stifles openness, risk sharing, learning opportunities and innovation.** Such inequities may lead to investment effectiveness being compromised. While DFAT has worked in partnership in many forms over the years, this approach requires a way of operating that is not 'business as usual' and sometimes presents DFAT with challenges as to how to embed the approach in its own systems. The combination of the portfolio and partnership approaches has regardless proven a powerful and positive force for the SDIP.

**The portfolio and partnership approaches work hand in hand in SDIP** – the partnership approach builds an environment of trust, openness, frank and timely communications, collaboration and respect – a framework within which the flexibility, responsiveness and agility of the portfolio approach can operate effectively: challenging conversations can and are had with a view to resolving them together.

**IFC commented on the efficiency and effectiveness of the portfolio and partnership approaches during its most recent partnership health check with DFAT:**

*SDIP is a much more efficient and effective approach than traditional funding: it allows for innovation and not doing 'business as usual'. The flexibility and adaptability of the portfolio approach means that if something is not working, or if the context has changed, we can refocus in order to continue to achieve the longer-term goal, so funds are not wasted nor time lost in contracting discussions.*

**CSIRO also reflected on the value of the twinned approach during its most recent partnership health check with DFAT:**

*The combined approach is both different and positive: it is not DFAT 'business as usual'. It is helping CSIRO to think and work less in silos, in a much more inter-disciplinary manner. It has provided great flexibility to allow us to respond appropriately to local needs, based on our own areas of strength – we can then focus on areas of biggest impact.*

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provided through the Annual Dialogue which DFAT convenes to maximise learning opportunities and thinking about the portfolio.

## **Contribution to efficiency and effectiveness**

**The twinned portfolio and partnership approach contributes to a more efficient and more effective program in several different ways.** These are captured below along with supporting examples from 2017-18.

- 1. Within the scope of shared objectives and strict investment criteria and their own areas of expertise, Partners can move to opportunities as they arise and/or as partner governments seek them** ensuring the SDIP delivers responsively and creatively on partner government and regional priorities. For example:
  - a. ICE WaRM quickly responded to the request of WECS for support in drafting the National Water Policy and capacity building in integrated resource water management;
  - b. IFC responded to a major U-turn in Nepal government policy/ideology regarding PPPs for hydropower development and closed one of their PPPs for more conventional advisory support;
  - c. CSIRO worked closely with Desk and HOM Pakistan to fine tune their program of work ensuring it was in service of GoP priorities.
- 2. Recalibrations in direction and/or activity are managed by discussion, in the spirit of partnership, and with no requirement for contract negotiations which can be time consuming.** Each of the examples in 1) above happened with full knowledge and support of DFAT but with minimal contract amendments. DFAT and partners were therefore freed to engage in more value-adding activities. For example:
  - a. IFC engaged the support of HOM Nepal, South Asia Regional and the relevant SDIP Advisors to navigate the recalibration of their hydro portfolio – IFC are still on track to meet their hydro targets;
  - b. ICIMOD sought to respond to a global gap in knowledge regarding the state of the Hindu Kush Himalaya and the need for a comprehensive baseline. SDIP's flexible funding allowed them the space to promote this work and Australia was for a year the sole funder of this initiative which in 2017-18 was finalised with the inputs of over 300 scientists from the region and beyond. Without the flexibility of the portfolio and the trust engendered through the partnership it is unlikely this initiative would have been finalised.
- 3. Given its engagement is more steerage and strategic, DFAT can support a broader sweep of partners who are engaged/doing more and generating more results.** The SDIP is supporting seven partners across three river basins and five countries – this would not be possible if DFAT were simply activity managers – the compliance load would be enormous. The compliance issues in SDIP are addressed up front through an exacting due diligence process and DFAT only partners with partners who it knows it can trust/who have a track record of delivery. The scope and extent of the portfolio is only possible through the portfolio and partnership approach.
  - a. DFAT's South Asia Regional Team, who lead on the SDIP, have mostly taken a steerage and strategic engagement approach – their time is spent understanding the nature of the partner engagement in the broader context of what is going on in the region – looking to understand where and how best to advance Australia's interests. TAF work on power markets in BBIN and the IFC work on large scale renewables in India both provide strategically inclined DFAT staff with enough grist to think where and how to pursue Australian investment in the Indian solar market. This aligns with the India Economic Strategy. Engaging and profiling the Australian High Commissioner to India at the IFC Climate Business Forum was part of this.
  - b. TAF on the back of their PEA on the price of power in BBIN countries seized an opportunity to create a South Asia Power Summit – drawing in the big actors in the space. Australia benefits greatly from this initiative. It would not have been possible in the time frames if

TAF had to negotiate a contract amendment and nor could DFAT have conceived it possible at the time they engaged TAF.

- c. Government to Government relationships with Nepal and Pakistan have both emerged through the work of the SDIP partners in this time period – the political/economic opportunities of influence cannot be understated.

**4. There are no surprises. Issues get tabled and addressed at the source, in the spirit of partnership. Conversely, opportunities are discussed in the same way.**

- a. IFC gave early warning re the issues with PPPs in Nepal; and CSIRO early warning on the time it takes to engage with the Government of Pakistan; TAF on the potential fall out of their PEA on the price of power in India; and ICE WaRM that they are operating out of the Basin geographies but purposefully to showcase their intra jurisdictional expertise/experience.
- b. Partners are also very keen to share their wins and give Australia as much profile as possible.

**5. Advisors provide continuity of advice and support to partners. Despite multiple iterations of DFAT staff turnover at Desk and at Post the portfolio has maintained its momentum.**

- a. In the 2017-18 DFAT staff turned over 100 per cent in Canberra and close to 50 per cent across four Posts. The Advisors did not change and they held open the space for partners to keep operating and to ensure they did so within DFAT comfort zones.
- b. Feedback from SDIP Partners on this includes:
  - i. *'While there have been a lot of changes in DFAT key personnel, transitions have been managed very well and this has not caused any anxiety, nor loss of continuity, which has been greatly appreciated.'* (Arun Shrestha, SDIP Project Director, ICIMOD);
  - ii. *'Constantly changing DFAT personnel has been challenging but possible because of the various measures put in place, including the consistent Advisor team, who have been a steady 'centre of gravity; keepers of the narrative story', which is important for SDIP long term, strategic approach'* (CSIRO 2017-18 Partnership health check).

**6. Partners have a safe space to innovate and collaborate.** For example:

- a. ICE WaRM seized an opportunity to work with TERI to develop a training module to support water professionals to be better equipped to consider gender and equity in their important work of managing water resources in India and the region. This would not have been possible without a safe space to innovate – this course is now being rolled out more broadly.
- b. IFC and ICIMOD took the opportunity to collaborate on the development of the environmental and social standards for hydro development. These have now been endorsed and adopted by the GoN for all hydro developments.

Finally, it is worth noting that the more successful the SDIP is the more partners will engage at Post. With each passing year the engagement of Post and relevant Desks has been increasing; this places a resource burden on DFAT that was underestimated in the 2012 design phase. It behoves a need for a DFAT internal communications protocol as inefficiencies can be created as various players engage and it also highlights that Posts are not necessarily resourced to optimise the value of SDIP success. This will need to be considered in the 2019 evaluation and in any configuring of SDIP3.

## 5. Lessons Learned and Opportunities for 2018-19

### Reflections on progress, the operating context, and future opportunities

- While there has been a focus on promoting formal mechanisms for regional cooperation, opportunities for regional cooperation are increasingly emerging through informal channels/regional dialogues.
- Collaboration and dialogue is increasingly being observed at the sub-regional level in South Asia. This includes Afghanistan-China-India-Pakistan through the Upper Indus Basin Network, and the Governments of Nepal and Bihar on Disaster Risk Reduction (DRR) in the Koshi Basin. While SDIP does successfully enable and maintain a focus upon regional dialogue (for example, through basin-level forums and knowledge hubs) it is well-positioned to support targeted bilateral/sub-regional dialogue and other initiatives.
- Despite some isolated examples of good practice there remains considerable variability across South Asia in terms of the quality, frequency and practice of sharing data. This is driven in part by a lack of trust between organisations, while the methods and practices being utilised by different agencies regarding the collection, use and dissemination of data are often different, even within the same region. Strengthening data collection and management practices is essential for improvements to evidence-based decision-making for the allocation of natural resources.
- Momentum is building in the renewables sector in India, particularly in terms of solar power (for example, India's goal is to produce 175 GW of renewable energy by 2022, including 100 GW from solar). SDIP partners are well-placed to make a strong contribution, with the approach developed to mobilise private sector finance for large-scale solar now being replicated across multiple Indian states.
- The need to improve water resource management has taken centre stage in Pakistan. SDIP partners (including CSIRO and ICE WaRM) are highly regarded by counterparts in Pakistan for their technical and advisory support and are therefore well-positioned to provide further assistance. The Indus River System Model, developed by SDIP partners, has the potential to be the common modelling framework used in Pakistan.
- The HKH Assessment highlighted the significant risks that climate change poses to the livelihoods of an estimated 240 million people who live in the Hindu Kush Himalaya and the estimated 1.65 billion people downstream.
- The breadth and depth of the results achieved through the SDIP, particularly over the last 2 years, indicate that the benefits of a long-term investment strategy are starting to be realised. Partners have invested considerable resources in building and strengthening relationships with key stakeholders over a long period of time and there is evidence to suggest that partners are now increasingly able to capitalise on new opportunities and respond positively to changes in the context.

### Reflections on M&E and priorities for 2018-19

- The design of the SDIP monitoring framework, including the structure of the Performance Assessment Framework (PAF) and annual milestones, needs to be updated. The focus areas of the PAF that represent a concentration of partner activity do not sufficiently capture the depth and breadth of the work being completed by partners such as IFC and TAF, nor does it reflect ACIAR's revised investment strategy. There is also considerable duplication between the PAF and the assessments of progress for the general portfolio level results.
- Technical discussions held with SDIP partners in 2018 were well-received and will be continued in 2019. The timing of the technical discussions, held from May-July, appeared to work well in terms of feeding in to the development of partner annual reports.
- There was a general improvement in terms of the focus on outcomes in partner annual reports for the 2017-18 period, although this could still be strengthened.
- There would be merit in reviewing and streamlining the templates used by SDIP partners to develop their annual reports. This is particularly the case given recent amendments to DFAT's Aid Quality Check (AQC) template, which no longer requires a rating and supporting evidence for criteria including Relevance, Sustainability, and M&E.
- Consideration of gender is clearly shifting from a focus on women's participation and representation, towards how SDIP can have an impact on women's agency and empowerment – also at a system-wide level. Over the next year all partners will be expected to demonstrate this shift in emphasis, as well as strengthen their capabilities in building a robust understanding of the gender outcomes of their work.
- The SDIP Annual Report for 2017-18 includes a series of country briefs for the first time. It will be important to gauge the usefulness of these briefs in their current form with a view to updating and amending them through the year.
- An independent review of SDIP2 is planned for mid-2019, with a view to shaping the design of SDIP3. Other research pieces, including identifying best-practice approaches and lessons learned for the consideration of gender in the SDIP, are also planned for 2019.

## Annex A – SDIP Country Briefs



## Afghanistan Country Brief

### Australia's support for increased water, food and energy security through the Sustainable Development Investment Portfolio (SDIP)

<b>Australia's Goal</b> (long-term impact)	<b>Increased water, food and energy security</b> in South Asia to facilitate low carbon economic growth and climate resilient livelihoods, benefiting the poor and vulnerable, particularly women and girls.
<b>Australia's Objective</b> (end-of-strategy (2024))	<b>Improved regional cooperation in the integrated management of water, food and energy resources</b> in the sub-region – addressing the effects of climate change and the roles and interests of women and girls.
<b>Australia's Outcomes for SDIP2</b> (by 2020)	<ol style="list-style-type: none"> <li>1. Strengthened practices for regional cooperation</li> <li>2. Critical new knowledge generated and used for regional cooperation</li> <li>3. Improved regional enabling environment, including for private sector engagement</li> </ol>
<b>Australia's budget for SDIP</b>	SDIP1 (2012-2016) - \$45 million SDIP2 (2016-2020) - \$42 million committed
<b>Timeframe</b>	12-year design to 2024, implemented through four-year funding commitments.
<b>Delivery Strategy</b>	<p><b>Through SDIP, Australia is investing in the work and capabilities of seven organisations (a 'portfolio' of partners)</b> engaged across three inter-related sectors: water resource management, agricultural productivity, and energy access and efficiency in South Asia.</p> <p><b>SDIP is underpinned by a 12-year investment strategy, with three phases of financial investment from DFAT.</b> Each four-year phase provides an opportunity for DFAT to tighten the focus for impact and, where necessary, to recalibrate the mix of investments and the geography of the investments. The fact that the strategy is designed for 12 years – and that partners design a program to serve the overall portfolio objectives – reduces the need for an extensive design period at the start of each phase and ensures that momentum is maintained. It also supports trust building in the region, as partners are considered to be committed to the long term.</p> <p><b>The portfolio approach is a shift away from activity-based engagements to one where DFAT interacts with its partners on a more strategic, policy and outcomes level,</b> with the approach also actively leveraging Australia's diplomatic presence in the region.</p> <p><b>SDIP also applies a structured and deliberate approach to partnerships between DFAT and SDIP partners.</b> This recognises that solutions to complex issues (such as rising water, energy and food insecurity) requires cross sectoral/multi-stakeholder collaborations of diverse but aligned organisations, contributing from their realms of strength, and that these are optimised by working to agreed shared objectives. Authentic partnership actively moves away from a more traditional contractor–service provider model, recognising this often leads to an entrenched power imbalance which stifles openness, risk sharing, learning opportunities and innovation.</p>

<p><b>SDIP2 partners and their work in Afghanistan</b></p>	<p><b>Commonwealth Scientific and Industrial Research Organisation (CSIRO)</b></p> <ul style="list-style-type: none"> <li>Supporting improved water resource management through capacity building.</li> </ul> <p><b>International Centre of Excellence in Water Resource Management (ICE WaRM)</b></p> <ul style="list-style-type: none"> <li>Providing support to the Indus Basin Knowledge Forum.</li> </ul> <p><b>International Centre for Integrated Mountain Development (ICIMOD)</b></p> <ul style="list-style-type: none"> <li>Supporting resilience of mountain communities in the Hindu Kush Himalaya through improved scientific understanding of resource and social issues.</li> </ul> <p><b>South Asia Water Initiative of the World Bank (SAWI)</b></p> <ul style="list-style-type: none"> <li>Assessing water sector issues, promoting regional cooperation and policy dialogue, and provision of technical assistance.</li> </ul> <p><i>Other SDIP partners not currently working in Afghanistan through SDIP:</i></p> <p><b>Australian Centre for International Agricultural Research (ACIAR)</b></p> <p><b>International Finance Corporation (IFC)</b></p> <p><b>The Asia Foundation (TAF)</b></p>
<p><b>Context for SDIP partner engagement in Afghanistan</b></p>	<p><b>Afghanistan is a low-income country and faces significant development challenges.</b> It is landlocked and highly dependent on foreign aid. It has suffered significantly from political instability and conflict, and rule of law remains insecure. Living standards are among the lowest in the world and include water and electricity shortages. Despite a slight recovery since 2015, economic growth has slowed since the commencement of withdrawal of international security forces in 2012.</p> <p><b>While contributing only a quarter of Afghanistan's GDP, agriculture is the largest industry for employment</b> and approximately 60 per cent of land is dedicated to agricultural use. Afghanistan is critically dependent on snow melt to feed its rivers and support agricultural production as it receives comparatively little monsoon rains. There are limited natural fresh water resources, inadequate supplies of potable water, and soil degradation due to overgrazing and deforestation.</p> <p><b>Afghanistan faces increasing water uncertainty over the next few decades, and this is likely to be exacerbated by climate change.</b> In early 2018, the snowpack in Afghanistan was the lowest detected in nearly 20 years, leading to the worst drought this century.</p>
<p><b>Highlights of key results achieved to date in Afghanistan for SDIP2 (2016-2020)</b></p> <p><b>[SDIP2 Outcome 1]</b></p>	<p><b><u>Outcome 1: Strengthened practices for regional cooperation</u></b></p> <p>→ <b><u>New tools and approaches to manage natural resources</u></b></p> <ul style="list-style-type: none"> <li>A pilot of <b>Community Based Flood Early Warning Systems (CBFEWS)</b> has been implemented in two provinces (Puli Khumri and Baghlan), building the resilience of these communities to climate change (ICIMOD);</li> <li>The Afghanistan Government is actively engaging in the two-year <b>Strengthening Water Resource Management in Afghanistan (SWaRMA)</b> project for integrated river basin management through their strong participation and full ownership of activities (ICIMOD and CSIRO);</li> </ul> <p>→ <b><u>Improved technical capacity and evidence of ownership of new approaches</u></b></p> <ul style="list-style-type: none"> <li>A <b>two-year capacity building program on transboundary water governance and management</b> (2015-2017) was delivered in response to a request from the Government of Afghanistan (SAWI). The program has supported the</li> </ul>

	<p>government's capacity to participate and engage in transboundary water dialogues in South Asia;</p> <ul style="list-style-type: none"> <li>• SAWI funding has supported implementation of the World Bank's restructured <b>Afghanistan Irrigation Restoration and Development</b> project which financed the establishment of a transboundary water unit in the Ministry of Energy and Water;</li> <li>• <b>The Government of Afghanistan has appointed a focal Ministry to coordinate increasing donor engagement in transboundary water management</b> (ADB, ICIMOD, USAID, EU, World Bank and DFAT). This is a crucial step forward and highlights the capacity gains on this issue in the Government, while ensuring program visibility, reducing overlap and identifying areas for coordination;</li> </ul> <p>→ <b><u>Increased availability of data and improved data sharing practices</u></b></p> <ul style="list-style-type: none"> <li>• Under the SWaRMA project, <b>Afghan partners have agreed to support development of a roadmap for a national water information system</b> established through joint development of good practice guidelines in water information management in Afghanistan and a proto-type water information system for one sub-basin of the Kabul Basin. The Ministry of Energy and water has also drafted the <b>national hydro-met data and information sharing policy</b>;</li> <li>• <b>Data from the recently released HKH Assessment is available</b> to policy makers and practitioners through the HKH Climate and Hydrology Visualisation and Access Portal (HI-CHAP);</li> </ul> <p>→ <b><u>Increasing policy dialogue, including consideration of climate change and gender</u></b></p> <ul style="list-style-type: none"> <li>• The <b>Upper Indus Basin Network (UIB-N) Dialogue</b> has been successful in fostering science-based cooperation among the four riparian countries with respect to present and future water availability, and the impact of climate change has been central to the dialogue. Afghanistan has committed support to the Regional UIB-N and the formation of the UIB-N Afghanistan chapter;</li> <li>• SAWI is strengthening capacity within the governments of Afghanistan and Pakistan to engage in dialogue on issues relating to the <b>Kunar/Kabul</b> river basin.</li> </ul>
<p>Highlights of key results achieved to date in Afghanistan for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 2]</b></p>	<p><b><u>Outcome 2: Critical new knowledge generated and used for regional cooperation</u></b></p> <p>→ <b><u>New knowledge improves the understanding of climate change and gender issues</u></b></p> <ul style="list-style-type: none"> <li>• The Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP) has produced a comprehensive assessment of the Hindu Kush Himalaya (HKH) region. <b>The HKH Assessment is the most comprehensive study of key development issues in the HKH region</b>, including the impact of climate change. It includes contributions from more than 300 scientists, including from ICIMOD;</li> <li>• A joint research proposal on '<b>Understanding climate change adaptation in the Indus Basin</b>' was finalised by the Indus Forum Working Group, and includes scientists from all four riverine Indus Basin countries (SAWI);</li> </ul>

<p>Highlights of key results achieved to date in Afghanistan for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 3]</b></p>	<p><b><u>Outcome 3: Improved regional enabling environment, including for private sector engagement</u></b></p> <ul style="list-style-type: none"> <li>• No current activity</li> </ul>
<p><b>Key players/relationships in Afghanistan</b></p>	<p><u>Beneficiaries</u></p> <ul style="list-style-type: none"> <li>• Kabul Polytechnic University</li> <li>• Kabul University</li> <li>• Ministries of Foreign Affairs (MoFA)</li> <li>• Ministry of Agriculture, Irrigation and Livestock (MAIL)</li> <li>• Ministry of Energy and Water (MEW)</li> <li>• Ministry of Finance (MoF)</li> <li>• National Environmental Protection Agency (NEPA)</li> <li>• Water Negotiating Committee</li> </ul> <p><u>Potential delivery partners</u></p> <ul style="list-style-type: none"> <li>• Aga Khan Agency for Habitat (AKAH)</li> <li>• International Institute of Applied System Analysis (IIASA)</li> <li>• International Water Management Institute (non-profit research organisation)</li> </ul>

### **Bangladesh Country Brief**

## **Australia's support for increased water, food and energy security through the Sustainable Development Investment Portfolio (SDIP)**

<b>Australia's Goal</b> (long-term impact)	<b>Increased water, food and energy security</b> in South Asia to facilitate low carbon economic growth and climate resilient livelihoods, benefiting the poor and vulnerable, particularly women and girls.
<b>Australia's Objective</b> (end-of-strategy (2024))	<b>Improved regional cooperation in the integrated management of water, food and energy resources</b> in the sub-region – addressing the effects of climate change and the roles and interests of women and girls.
<b>Australia's Outcomes for SDIP2</b> (by 2020)	<ol style="list-style-type: none"> <li>1. Strengthened practices for regional cooperation</li> <li>2. Critical new knowledge generated and used for regional cooperation</li> <li>3. Improved regional enabling environment, including for private sector engagement</li> </ol>
<b>Australia's budget for SDIP</b>	SDIP1 (2012-2016) - \$45 million SDIP2 (2016-2020) - \$42 million committed
<b>Timeframe</b>	12-year design to 2024, implemented through four-year funding commitments.
<b>Delivery Strategy</b>	<p><b>Through SDIP, Australia is investing in the work and capabilities of seven organisations (a 'portfolio' of partners)</b> engaged across three inter-related sectors: water resource management, agricultural productivity, and energy access and efficiency in South Asia.</p> <p><b>SDIP is underpinned by a 12-year investment strategy, with three phases of financial investment from DFAT.</b> Each four-year phase provides an opportunity for DFAT to tighten the focus for impact and, where necessary, to recalibrate the mix of investments and the geography of the investments. The fact that the strategy is designed for 12 years – and that partners design a program to serve the overall portfolio objectives – reduces the need for an extensive design period at the start of each phase and ensures that momentum is maintained. It also supports trust building in the region, as partners are considered to be committed to the long term.</p> <p><b>The portfolio approach is a shift away from activity-based engagements to one where DFAT interacts with its partners on a more strategic, policy and outcomes level,</b> with the approach also actively leveraging Australia's diplomatic presence in the region.</p> <p><b>SDIP also applies a structured and deliberate approach to partnerships between DFAT and SDIP partners.</b> This recognises that solutions to complex issues (such as rising water, energy and food insecurity) requires cross sectoral/multi-stakeholder collaborations of diverse but aligned organisations, contributing from their realms of strength, and that these are optimised by working to agreed shared objectives. Authentic partnership actively moves away from a more traditional contractor–service provider model, recognising this often leads to an entrenched power imbalance which stifles openness, risk sharing, learning opportunities and innovation.</p>

<p><b>SDIP2 partners and their work in Bangladesh</b></p>	<p><b>Australian Centre for International Agricultural Research (ACIAR)</b></p> <ul style="list-style-type: none"> <li>Improving the productivity and climate resilience of agricultural systems in the Eastern Gangetic Plains through the promotion of conservation agriculture.</li> </ul> <p><b>Commonwealth Scientific and Industrial Research Organisation (CSIRO)</b></p> <ul style="list-style-type: none"> <li>Strengthening the technical capacity of water sector managers to support cooperative decision making on regional water resources and building the knowledge base through scientific research.</li> </ul> <p><b>International Centre of Excellence in Water Resource Management (ICE WaRM)</b></p> <ul style="list-style-type: none"> <li>Building the capacity and technical skills of water sector managers and policy makers to enhance cooperative decision making.</li> </ul> <p><b>International Centre for Integrated Mountain Development (ICIMOD)</b></p> <ul style="list-style-type: none"> <li>Supporting resilience of mountain communities in the Hindu Kush Himalaya through improved scientific understanding of resource and social issues.</li> </ul> <p><b>International Finance Corporation (IFC)</b></p> <ul style="list-style-type: none"> <li>Facilitating investment in sustainable energy (hydropower, solar and energy efficiency) and improving the enabling environment for the private sector.</li> </ul> <p><b>South Asia Water Initiative of the World Bank (SAWI)</b></p> <ul style="list-style-type: none"> <li>Assessing water sector issues, promoting regional cooperation and policy dialogue, and provision of technical assistance.</li> </ul> <p><b>The Asia Foundation (TAF)</b></p> <ul style="list-style-type: none"> <li>Undertaking political economy analysis and facilitating inclusive dialogue among state, civil society and market actors.</li> </ul>
<p><b>Context for SDIP partner engagement in Bangladesh</b></p>	<p><b>Over the last 30 years Bangladesh has made significant progress reducing levels of extreme poverty</b>, supported by high rates of economic growth. It achieved lower middle-income status. The garment sector accounted for 80 per cent of the Bangladesh's exports in 2016-17 and continues to grow. However, socio-economic challenges remain, such as vulnerability to climate change and natural disasters, rapid urbanisation, and low access to reliable and affordable power.</p> <p><b>Bangladesh is in a delta region formed by the Ganges and Brahmaputra river systems, which flow from the Himalayas.</b> It is subject to droughts, cyclones and flooding during the summer monsoon season. There are intermittent water shortages due to falling water tables in the northern and central areas. Bangladesh is vulnerable to climate change and natural disasters due to its geographic location.</p> <p><b>Since 1995, Bangladesh has enjoyed one of the fastest rates of agricultural productivity growth in the world</b>, with the agricultural sector accounting for 14 per cent of GDP. 70 per cent of land is used for agriculture, and almost half the population are employed in the sector. Food security remains tenuous due to a current high population density, an increasing population, decreasing arable land (at a rate of 1 per cent per year) and frequent natural disasters. <b>Approximately 40 per cent of the population do not have access to electricity, the majority located in rural areas.</b></p>

<p>Highlights of key results achieved to date in Bangladesh for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 1]</b></p>	<p><b><u>Outcome 1: Strengthened practices for regional cooperation</u></b></p> <p>→ <b><u>New tools and approaches to manage natural resources</u></b></p> <ul style="list-style-type: none"> <li>• <b>Trials of Conservation Agriculture-based System Intensification (CASI) practices in the Eastern Gangetic Plains</b> were found to have improved the productivity and profitability of rice, maize, wheat and lentil farming systems. They also reduced the amount of water, fuel and labour needed to produce a crop (relative to conventional farming practices), thereby increasing the resilience and profitability of small-scale farmers.</li> </ul> <p>→ <b><u>Improved technical capacity and evidence of ownership of new approaches</u></b></p> <ul style="list-style-type: none"> <li>• <b>Evidence that key national institutions in Bangladesh have greater capacity to engage on issues relating to agricultural livelihoods</b>, including: <ul style="list-style-type: none"> <li>○ Institute of Water Modelling – through region-wide groundwater and surface water monitoring using MODFLOW;</li> <li>○ Bangladesh Agricultural Research Institute – through assessments of land-use, cropping systems and water use;</li> <li>○ Bangladesh Agricultural University – through research into agricultural water management;</li> </ul> </li> <li>• ICIMOD and SAWI have <b>built capacity within key institutions in Nepal, Bhutan, Bangladesh and India to use flood forecasting systems</b>.</li> </ul> <p>→ <b><u>Increased availability of data and improved data sharing practices</u></b></p> <ul style="list-style-type: none"> <li>• <b>Data from the recently released HKH Assessment is available</b> to policy makers and practitioners through the HKH Climate and Hydrology Visualisation and Access Portal (HI-CHAP);</li> </ul> <p>→ <b><u>Policy dialogue, including consideration of climate change and gender</u></b></p> <ul style="list-style-type: none"> <li>• <b>Evidence of leadership in convening multi-stakeholder dialogue processes and deepening policy dialogue</b>. <ul style="list-style-type: none"> <li>○ Signalling increasing ownership of the <b>Brahmaputra Dialogue</b>, in December 2017 the third phase was advanced by the four riparian countries themselves (Bangladesh, Bhutan, China, India) and co-implemented by a consortium of institutions across the four riparian countries. It also included a dedicated gender session for the first time;</li> <li>○ A major outcome of the <b>Brahmaputra River Symposium</b> in September 2017 was consensus among the delegates that the dialogue process has the potential to navigate the geopolitical complexity hindering good governance in the basin, and that it should be continued;</li> </ul> </li> </ul>
<p>Highlights of key results achieved to date in Bangladesh for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 2]</b></p>	<p><b><u>Outcome 2: Critical new knowledge generated and used for regional cooperation</u></b></p> <p>→ <b><u>New knowledge is being generated</u></b></p> <ul style="list-style-type: none"> <li>• SAWI has supported the Government of Bangladesh's efforts in climate-smart agricultural water management through the draft <b>Delta Management Investment Plan</b>. It will inform the preparation of the Bangladesh Climate-Smart Agricultural Water Management Project;</li> <li>• TAF produced '<i>The political economy of cross-border rice trade in India, Bangladesh and Nepal</i>' on behalf of ACIAR;</li> <li>• TAF has also produced '<i>The Price of Power: the political economy of electricity trade and hydropower in eastern South Asia</i>' which explores the politics and</li> </ul>

	<p>economics of prospective electricity trade between Bangladesh, Bhutan, India and Nepal;</p> <ul style="list-style-type: none"> <li>• <b>Research being undertaken by CSIRO is building a greater understanding of sustainable groundwater use in the north-west region of Bangladesh.</b> The analysis suggests there has been no increase in net irrigation water use over the last decade, so the decline in groundwater levels is not due to increase in irrigation as is widely believed;</li> </ul> <p>→ <b><u>New knowledge underpins dialogue on cooperation and decision-making</u></b></p> <ul style="list-style-type: none"> <li>• A <b>Bangladesh-India-Nepal knowledge platform</b> has been established (ACIAR) for ongoing collaboration and learning with more than 20 partners;</li> </ul> <p>→ <b><u>New knowledge improves the understanding of climate change and gender issues</u></b></p> <ul style="list-style-type: none"> <li>• The Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP) has produced a comprehensive assessment of the Hindu Kush Himalaya (HKH) region. <b>The HKH Assessment is the most comprehensive study of key development issues in the HKH region</b>, including the impact of climate change. It includes contributions from more than 300 scientists, including from ICIMOD;</li> <li>• <b><i>The political economy of cross-border rice trade in India, Bangladesh and Nepal</i></b> (TAF) identifies that climatic shocks are the preeminent driver of variations in rice trade volumes in the region;</li> <li>• <b>Research undertaken by CSIRO</b> in collaboration with Bangladesh Agricultural University developed a greater understanding of cropping patterns and resource use and <b>considered socio-economic and gender outcomes under different water conditions</b>;</li> </ul>
<p>Highlights of key results achieved to date in Bangladesh for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 3]</b></p>	<p><b><u>Improved regional enabling environment, including for private sector engagement</u></b></p> <p>→ <b><u>Private firms have greater technical capacity or access to technical assistance to invest in responses to food-water-energy challenges and trade-offs</u></b></p> <ul style="list-style-type: none"> <li>• <b>SDIP partners are providing advisory services to private sector companies to support improvements in resource efficiency.</b> For example, the <b>Partnership for Cleaner Textiles</b> (PaCT) program (IFC) focuses on improving resource efficiency in the Bangladesh textile industry and has resulted in water and energy savings, and reductions in greenhouse gas emissions and waste water discharges.</li> </ul>
<p><b>Key players/relationships in Bangladesh</b></p>	<ul style="list-style-type: none"> <li>• Bangladesh Agricultural Research Council (BARC)</li> <li>• Bangladesh Agricultural Research Institute (BARI)</li> <li>• Bangladesh Agricultural University (BAU)</li> <li>• Bangladesh University of Engineering and Technology (BUET)</li> <li>• Barind Multipurpose Development Authority (BMDA)</li> <li>• Centre for Environmental and Geographic Information Services</li> <li>• Institute of Water Modelling (IWM)</li> <li>• Water Resources Planning Organisation (WARPO)</li> </ul>



### **Bhutan Country Brief**

## **Australia's support for increased water, food and energy security through the Sustainable Development Investment Portfolio (SDIP)**

<b>Australia's Goal</b> (long-term impact)	<b>Increased water, food and energy security</b> in South Asia to facilitate low carbon economic growth and climate resilient livelihoods, benefiting the poor and vulnerable, particularly women and girls.
<b>Australia's Objective</b> (end-of-strategy (2024))	<b>Improved regional cooperation in the integrated management of water, food and energy resources</b> in the sub-region – addressing the effects of climate change and the roles and interests of women and girls.
<b>Australia's Outcomes for SDIP2</b> (by 2020)	<ol style="list-style-type: none"> <li>1. Strengthened practices for regional cooperation</li> <li>2. Critical new knowledge generated and used for regional cooperation</li> <li>3. Improved regional enabling environment, including for private sector engagement</li> </ol>
<b>Australia's budget for SDIP</b>	SDIP1 (2012-2016) - \$45 million SDIP2 (2016-2020) - \$42 million committed
<b>Timeframe</b>	12-year design to 2024, implemented through four-year funding commitments.
<b>Delivery Strategy</b>	<p><b>Through SDIP, Australia is investing in the work and capabilities of seven organisations (a 'portfolio' of partners)</b> engaged across three inter-related sectors: water resource management, agricultural productivity, and energy access and efficiency in South Asia.</p> <p><b>SDIP is underpinned by a 12-year investment strategy, with three phases of financial investment from DFAT.</b> Each four-year phase provides an opportunity for DFAT to tighten the focus for impact and, where necessary, to recalibrate the mix of investments and the geography of the investments. The fact that the strategy is designed for 12 years – and that partners design a program to serve the overall portfolio objectives – reduces the need for an extensive design period at the start of each phase and ensures that momentum is maintained. It also supports trust building in the region, as partners are considered to be committed to the long term.</p> <p><b>The portfolio approach is a shift away from activity-based engagements to one where DFAT interacts with its partners on a more strategic, policy and outcomes level,</b> with the approach also actively leveraging Australia's diplomatic presence in the region.</p> <p><b>SDIP also applies a structured and deliberate approach to partnerships between DFAT and SDIP partners.</b> This recognises that solutions to complex issues (such as rising water, energy and food insecurity) requires cross sectoral/multi-stakeholder collaborations of diverse but aligned organisations, contributing from their realms of strength, and that these are optimised by working to agreed shared objectives. Authentic partnership actively moves away from a more traditional contractor–service provider model, recognising this often leads to an entrenched power imbalance which stifles openness, risk sharing, learning opportunities and innovation.</p>

SDIP2 partners and their work in Bhutan	<p><b>International Centre for Integrated Mountain Development (ICIMOD)</b></p> <ul style="list-style-type: none"> <li>Supporting resilience of mountain communities in the Hindu Kush Himalaya through improved scientific understanding of resource and social issues.</li> </ul> <p><b>International Finance Corporation (IFC)</b></p> <ul style="list-style-type: none"> <li>Facilitating investment in sustainable energy (hydropower, solar and energy efficiency) and improving the enabling environment for the private sector.</li> </ul> <p><b>South Asia Water Initiative of the World Bank (SAWI)</b></p> <ul style="list-style-type: none"> <li>Assessing water sector issues, promoting regional cooperation and policy dialogue, and provision of technical assistance.</li> </ul> <p><b>The Asia Foundation (TAF)</b></p> <ul style="list-style-type: none"> <li>Undertaking political economy analysis and facilitating inclusive dialogue among state, civil society and market actors.</li> </ul> <p><i>Other SDIP partners not currently working in Bhutan through SDIP:</i></p> <p><b>Australian Centre for International Agricultural Research (ACIAR)</b></p> <p><b>Commonwealth Scientific and Industrial Research Organisation (CSIRO)</b></p> <p><b>International Centre of Excellence in Water Resource Management (ICE WaRM)</b></p>
Context for SDIP partner engagement in Bhutan	<p>The Bhutanese economy continues to grow strongly with GDP growing at an estimated 7.4 per cent in 2016-17, following on from an estimated 7.3 per cent in 2015-16. Poverty levels have been falling, and per capita income has increased, with <b>Bhutan in the process of transitioning to middle-income country status</b>. Economic growth over the medium term is expected to be driven by new hydropower plants coming on stream, services, and manufacturing.</p> <p>Bhutan is located within the Brahmaputra river basin, which it shares with Bangladesh, China and India. <b>Steep mountains and swift flowing rivers make hydropower production a natural fit in Bhutan.</b> The country is estimated to have a total hydropower generation capacity of 30,000 MW, with less than 2,000 MW having been installed to date. Bhutan is likely to see significant increases in export and tax revenues as new hydropower projects become operational. Bhutan's hydropower sector is closely tied to India, which provides financial investment and technical assistance and imports a vast share of the produced electricity.</p>
<p>Highlights of key results achieved to date in Bhutan for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 1]</b></p>	<p><b><u>Outcome 1: Strengthened practices for regional cooperation</u></b></p> <p>➔ <b><u>New tools and approaches to manage natural resources</u></b></p> <ul style="list-style-type: none"> <li>The Royal Government of Bhutan has adopted the ICIMOD-ACWADAM developed protocol for spring revival. Further, ICIMOD has been asked by the Watershed Management Division of the Bhutan Ministry of Agriculture and Forests to scale up pilot locations identified for technical support.</li> </ul> <p>➔ <b><u>Improved technical capacity and evidence of ownership of new approaches</u></b></p> <ul style="list-style-type: none"> <li>ICIMOD and SAWI have built capacity within key institutions in Nepal, Bhutan, Bangladesh and India to use flood forecasting systems. <ul style="list-style-type: none"> <li>SAWI continues to strengthen capacity of Bhutan's National Centre for Hydrology and Meteorology on hydro-met monitoring, forecasting and service delivery in priority sectors, including flood forecasting and early warning.</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• In 2017, SAWI completed a two-year water governance capacity strengthening program in Afghanistan, and in Bangladesh and Bhutan, leading to stronger inter-ministerial collaboration and confidence to engage with neighbouring countries.</li> </ul> <p>→ <b><u>Increased availability of data and improved data sharing practices</u></b></p> <ul style="list-style-type: none"> <li>• Data from the recently released HKH Assessment is available to policy makers and practitioners through the HKH Climate and Hydrology Visualisation and Access Portal (HI-CHAP);</li> </ul> <p>→ <b><u>Policy dialogue, including consideration of climate change and gender</u></b></p> <ul style="list-style-type: none"> <li>• Evidence of leadership in convening multi-stakeholder dialogue processes and deepening policy dialogue. <ul style="list-style-type: none"> <li>○ Signalling increasing ownership of the <b>Brahmaputra Dialogue</b>, in December 2017 the third phase was advanced by the four riparian countries themselves (Bangladesh, Bhutan, China, India) and co-implemented by a consortium of institutions across the four riparian countries. It also included a dedicated gender session for the first time;</li> <li>○ A major outcome of the <b>Brahmaputra River Symposium</b> in September 2017 was consensus among the delegates that the dialogue process has the potential to navigate the geopolitical complexity hindering good governance in the basin, and that it should be continued;</li> </ul> </li> </ul>
<p>Highlights of key results achieved to date in Bhutan for SDIP2 (2016-2020)</p> <p><b><u>[SDIP2 Outcome 2]</u></b></p>	<p><b><u>Outcome 2: Critical new knowledge generated and used for regional cooperation</u></b></p> <p>→ <b><u>New knowledge is being generated</u></b></p> <ul style="list-style-type: none"> <li>• TAF produced '<i>The Price of Power: the political economy of electricity trade and hydropower in eastern South Asia</i>' which explores the politics and economics of prospective electricity trade between Bangladesh, Bhutan, India and Nepal;</li> <li>• The report '<b>Modernizing Weather, Water and Climate Services: A Road Map for Bhutan</b>' prepared through extensive consultations with the Royal Government of Bhutan has been published and disseminated (SAWI);</li> <li>• SAWI delivered an improved national repository on aquatic biodiversity through the launch of a <b>Improved Bhutan Biodiversity Portal</b> (March 2018) and on cultural heritage through a report on <b>Integrating Cultural Landscape Considerations in Large Infrastructure Planning in Bhutan</b> (January 2018); and, an online interactive map showing available georeferenced data on cultural heritage, which is important for informing the planning of any future hydropower investments;</li> </ul> <p>→ <b><u>New knowledge underpins dialogue on cooperation and decision-making</u></b></p> <ul style="list-style-type: none"> <li>• In 2018, SAWI supported an advanced workshop on state-of-the-art <b>Hydrometric Data Acquisition and Transmission Networks: Measurements and Modelling</b>, bringing together government officials and academics from across India, Nepal, Bhutan and Bangladesh. The workshop discussed pathways for improving regional cooperation on hydro-met networks, potentially between the BBIN countries and facilitated sharing of best practices;</li> </ul>

	<p>→ <b><u>New knowledge improves the understanding of climate change and gender issues</u></b></p> <ul style="list-style-type: none"> <li>• The Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP) has produced a comprehensive assessment of the Hindu Kush Himalaya (HKH) region. <b>The HKH Assessment is the most comprehensive study of key development issues in the HKH region</b>, including the impact of climate change. It includes contributions from more than 300 scientists, including from ICIMOD;</li> </ul>
<p>Highlights of key results achieved to date in Bhutan for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 3]</b></p>	<p><b><u>Improved regional enabling environment, including for private sector engagement</u></b></p> <p>→ <b><u>International standards increasingly being adopted within government regulations and guidelines</u></b></p> <ul style="list-style-type: none"> <li>• The Royal Government of Bhutan has finalised its <b>first ever ‘Guidelines for the Development of Hydropower’</b>. The guidelines are instrumental to incorporating social and environmental aspects, and cumulative impacts, into future plans for hydropower expansion. The new guidelines are urgently needed to support the sustainable development of the planned vast expansion of hydropower in Bhutan in the next decade, which will see development in all major rivers of Bhutan (SAWI).</li> </ul>
<p><b>Key players/ relationships in Bhutan</b></p>	<ul style="list-style-type: none"> <li>• Bhutan National Center for Hydrology and Meteorology</li> <li>• Bhutan Power Corporation</li> <li>• Bhutan Water Partnership</li> <li>• Department of Hydropower and Power Systems</li> <li>• Druk Green Power Corporation</li> <li>• Global Facility for Disaster Reduction and Recovery</li> <li>• Ministry of Agriculture and Forests</li> </ul>

## India Country Brief

### Australia's support for increased water, food and energy security through the Sustainable Development Investment Portfolio (SDIP)

<b>Australia's Goal</b> (long-term impact)	<b>Increased water, food and energy security</b> in South Asia to facilitate low carbon economic growth and climate resilient livelihoods, benefiting the poor and vulnerable, particularly women and girls.
<b>Australia's Objective</b> (end-of-strategy (2024))	<b>Improved regional cooperation in the integrated management of water, food and energy resources</b> in the sub-region – addressing the effects of climate change and the roles and interests of women and girls.
<b>Australia's Outcomes for SDIP2</b> (by 2020)	<ol style="list-style-type: none"> <li>1. Strengthened practices for regional cooperation</li> <li>2. Critical new knowledge generated and used for regional cooperation</li> <li>3. Improved regional enabling environment, including for private sector engagement</li> </ol>
<b>Australia's budget for SDIP</b>	SDIP1 (2012-2016) - \$45 million SDIP2 (2016-2020) - \$42 million committed
<b>Timeframe</b>	12-year design to 2024, implemented through four-year funding commitments.
<b>Delivery Strategy</b>	<p><b>Through SDIP, Australia is investing in the work and capabilities of seven organisations (a 'portfolio' of partners)</b> engaged across three inter-related sectors: water resource management, agricultural productivity, and energy access and efficiency in South Asia.</p> <p><b>SDIP is underpinned by a 12-year investment strategy, with three phases of financial investment from DFAT.</b> Each four-year phase provides an opportunity for DFAT to tighten the focus for impact and, where necessary, to recalibrate the mix of investments and the geography of the investments. The fact that the strategy is designed for 12 years – and that partners design a program to serve the overall portfolio objectives – reduces the need for an extensive design period at the start of each phase and ensures that momentum is maintained. It also supports trust building in the region, as partners are considered to be committed to the long term.</p> <p><b>The portfolio approach is a shift away from activity-based engagements to one where DFAT interacts with its partners on a more strategic, policy and outcomes level,</b> with the approach also actively leveraging Australia's diplomatic presence in the region.</p> <p><b>SDIP also applies a structured and deliberate approach to partnerships between DFAT and SDIP partners.</b> This recognises that solutions to complex issues (such as rising water, energy and food insecurity) requires cross sectoral/multi-stakeholder collaborations of diverse but aligned organisations, contributing from their realms of strength, and that these are optimised by working to agreed shared objectives. Authentic partnership actively moves away from a more traditional contractor–service provider model, recognising this often leads to an entrenched power imbalance which stifles openness, risk sharing, learning opportunities and innovation.</p>

SDIP2 partners and their work in India	<p><b>Australian Centre for International Agricultural Research (ACIAR)</b></p> <ul style="list-style-type: none"> <li>Improving the productivity and climate resilience of agricultural systems in the Eastern Gangetic Plains through the promotion of conservation agriculture.</li> </ul> <p><b>Commonwealth Scientific and Industrial Research Organisation (CSIRO)</b></p> <ul style="list-style-type: none"> <li>Strengthening the technical capacity of water sector managers to support cooperative decision making on regional water resources and building the knowledge base through scientific research.</li> </ul> <p><b>International Centre of Excellence in Water Resource Management (ICE WaRM)</b></p> <ul style="list-style-type: none"> <li>Building the capacity and technical skills of water sector managers and policy makers to enhance cooperative decision making.</li> </ul> <p><b>International Centre for Integrated Mountain Development (ICIMOD)</b></p> <ul style="list-style-type: none"> <li>Supporting resilience of mountain communities in the Hindu Kush Himalaya through improved scientific understanding of resource and social issues.</li> </ul> <p><b>International Finance Corporation (IFC)</b></p> <ul style="list-style-type: none"> <li>Facilitating investment in sustainable energy (hydropower, solar and energy efficiency) and improving the enabling environment for the private sector.</li> </ul> <p><b>South Asia Water Initiative of the World Bank (SAWI)</b></p> <ul style="list-style-type: none"> <li>Assessing water sector issues, promoting regional cooperation and policy dialogue, and provision of technical assistance.</li> </ul> <p><b>The Asia Foundation (TAF)</b></p> <ul style="list-style-type: none"> <li>Undertaking political economy analysis and facilitating inclusive dialogue among state, civil society and market actors.</li> </ul>
Context for SDIP partner engagement in India	<p><b>India is the world's third largest economy in purchasing parity terms, though per capita income remains below the world average.</b> India faces development challenges relating to population growth, rapid urbanisation, environmental degradation, and poverty which disproportionality affect the status of women and girls.</p> <p><b>India is central to the Indus, Ganges and Brahmaputra river basins.</b> These major rivers are the source of livelihoods for over a billion people, particularly for agriculture. In India, 60 per cent of land is used for agricultural purposes and almost 50 per cent of the population are engaged in the agricultural sector in some capacity.</p> <p><b>India is under immense pressure to produce sufficient food and energy to meet the demands of an increasingly urbanised and industrially developed population.</b> This is driving an increase in demand for natural resources, particularly for water. Agriculture accounts for 80 per cent of water use in India, and resources are under increasing pressure due to urbanisation, and rising demand for energy. The country faces an intensifying water crisis due to over extraction of groundwater and widespread pollution. This is exacerbated by the impacts of climate change, which are making monsoon rains more variable and increasing the risk of extreme weather events.</p>

<p>Highlights of key results achieved to date in India for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 1]</b></p>	<p><b><u>Outcome 1: Strengthened practices for regional cooperation</u></b></p> <p>→ <b><u>New tools and approaches to manage natural resources</u></b></p> <ul style="list-style-type: none"> <li>• <b>Flood forecasting tools and early warning systems have been developed and are being used in the Ganges Basin</b>, providing early warning to downstream communities of flash floods. For example, in August 2017, an alarm from a flood warning system in Bardibas, Nepal was disseminated to communities downstream in Bhitthamore, Bihar (India). The alarm was received four hours before flood waters arrived, providing time for these communities to move to higher ground and avoiding losses of an estimated USD 0.7 million;</li> <li>• <b>Trials of Conservation Agriculture-based System Intensification (CASI) practices</b> in Bihar (e.g., Purnea) and in West Bengal (e.g., Malda, Cooch Benar) have yielded strong results. An external review found that CASI practices improved the productivity and profitability of rice, maize, wheat and lentil farming systems and reduced the amount of water, fuel and labour needed to produce a crop (relative to conventional farming practices);</li> <li>• The customised and purpose-built <b>Ganga River Basin Modelling suite, and associated Water Information Dashboard</b> was completed and transferred to India's Central Water Commission (CWC) (SAWI). It is expected to guide basin planning and water resource assessments by the Indian Government.</li> </ul> <p>→ <b><u>Improved technical capacity and evidence of ownership of new approaches</u></b></p> <ul style="list-style-type: none"> <li>• <b>CASI practices are being embedded within longer term programs and strategies</b>, including the Department of Agriculture in West Bengal. The state government of Bihar recently awarded Bihar Agricultural University \$350,000 to promote CASI technologies.</li> <li>• <b>Hydrometeorological agencies are using SDIP supported flood outlook systems</b>. For example, the Government of Bihar's Water Resources Department has been using information from the Koshi Flood Outlook to support forecasting (ICIMOD).</li> <li>• <b>Basin-scale flood forecasting and early warning systems</b> are now embedded in the disaster risk management planning, policies and procedures of the Government of Bihar (ICIMOD and SAWI).</li> <li>• <b>A new approach to mobilising private sector investment in large-scale solar projects</b> has been developed and is being embedded in national guidelines (IFC). The approach was used to mobilise finance for the REWA Ultra Mega Solar Project in Madhya Pradesh, India. The approach demonstrates that well-structured large-scale solar projects can attract commercial financing.</li> </ul> <p>→ <b><u>Increased availability of data and improved data sharing practices</u></b></p> <ul style="list-style-type: none"> <li>• <b>Data generated by the Koshi Basin Information System (ICIMOD)</b> is used daily by the Bihar Disaster Management Department and Water Resources Department. The system provides up-to-date data on climate change, water and agriculture, and socioeconomic dynamics.</li> <li>• <b>Data from the recently released HKH Assessment is available</b> to policy makers and practitioners through the HKH Climate and Hydrology Visualisation and Access Portal (HI-CHAP);</li> </ul> <p>→ <b><u>Policy dialogue, including consideration of climate change and gender</u></b></p> <ul style="list-style-type: none"> <li>• <b>Evidence of leadership in convening multi-stakeholder dialogue processes and deepening policy dialogue.</b></li> </ul>
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	<ul style="list-style-type: none"> <li>○ Signalling increasing ownership of the <b>Brahmaputra Dialogue</b> (facilitated by SAWI), in December 2017 the third phase was advanced by the four riparian countries (Bangladesh, Bhutan, China, India) and co-implemented by a consortium of institutions. It also included a dedicated gender session for the first time;</li> <li>○ A major outcome of the <b>Brahmaputra River Symposium</b> in September 2017 was consensus among the delegates that the dialogue process has the potential to navigate the geopolitical complexity hindering good governance in the basin, and that it should be continued;</li> <li>○ The <b>Upper Indus Basin Network Dialogue</b> has fostered science-based dialogue among the four riparian countries with respect to present and future water availability, and the impact of climate change has been central to the dialogue.</li> <li>● <b>Increasing engagement of the private sector in policy dialogue.</b> <ul style="list-style-type: none"> <li>○ In late 2017 the fourth Climate Business Forum, led by IFC, was held in New Delhi, an event that brought together business leaders in banking, energy, agribusiness, and climate-related sectors;</li> </ul> </li> </ul> <p>Also held in 2017-18 was the annual South Asia Power Summit (facilitated by TAF), an annual platform for discussing the most pressing issues facing India's power sector. The event was attended by over 100 of India's largest power sector companies and financiers.</p>
<p>Highlights of key results achieved to date in India for SDIP2 (2016-2020)</p> <p><u>[SDIP2 Outcome 2]</u></p>	<p><b><u>Outcome 2: Critical new knowledge generated and used for regional cooperation</u></b></p> <p>→ <b><u>New knowledge is being generated:</u></b></p> <ul style="list-style-type: none"> <li>● TAF produced '<i>The Price of Power: the political economy of electricity trade and hydropower in eastern South Asia</i>' which explores the politics and economics of prospective electricity trade between Bangladesh, Bhutan, India and Nepal;</li> <li>● SAWI supported the <b>Indian Ministry of Water Resources River Development &amp; Ganga Rejuvenation to develop a hydro-met manual on the real-time Hydrological Information System under the National Hydrology Program.</b> Real-time hydro-met and water resources data can help planners make informed decisions for flood forecasting, water supply management, hydropower generation, as well as for environmental monitoring and planning;</li> <li>● <b>The Indian Ministry of Water Resources has established a Research Chair on water conflicts and governance</b> at the Centre for Policy Research, New Delhi with TAF support;</li> </ul> <p>→ <b><u>New knowledge underpins dialogue on cooperation and decision-making</u></b></p> <ul style="list-style-type: none"> <li>● <b>The importance of drawing on the available evidence base for dialogue and decision-making is increasingly being recognised,</b> One of three key actions from the 2017 Brahmaputra Dialogue is to develop a Brahmaputra Knowledge Portal, which would collate and curate the currently dispersed information and data on the Brahmaputra Basin to support more informed decision-making;</li> </ul> <p>→ <b><u>New knowledge improves the understanding of climate change and gender issues</u></b></p> <ul style="list-style-type: none"> <li>● The Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP) has produced a comprehensive assessment of the Hindu Kush Himalaya (HKH) region. <b>The HKH Assessment is the most comprehensive study of key</b></li> </ul>



	<p><b>development issues in the HKH region</b>, including the impact of climate change. It includes contributions from more than 300 scientists, including from ICIMOD;</p> <ul style="list-style-type: none"> <li>• A joint research proposal on '<b>Understanding climate change adaptation in the Indus Basin</b>' was finalised by the Indus Forum Working Group, and includes scientists from all four riverine Indus Basin countries (SAWI);</li> <li>• <b>The environmental and social systems assessment for India's National Groundwater Management Improvement Program</b> focused on gender issues and provided concrete recommendations for a gender informed groundwater investment program (ICIMOD/SAWI).</li> <li>• <b>A short course on gender equity in the water sector was designed and delivered</b> for the first time by TERI School of Advanced Studies (previously TERI University) (ICE WaRM). The course builds the understanding of gender considerations in water management amongst government officials, NGOs, development agencies and the private sector</li> </ul>
<p>Highlights of key results achieved to date in India for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 3]</b></p>	<p><b><u>Outcome 3: Improved regional enabling environment, including for private sector engagement</u></b></p> <p>→ <b><u>Increased access to finance or other resources</u></b></p> <ul style="list-style-type: none"> <li>• <b>IFC played a critical advisory role in mobilising \$576 million of private investment</b> for the construction and operation of the REWA Ultra Mega Power Project in Madhya Pradesh, India, one of the world's largest solar projects (750 MW). National and state governments are now seeking to replicate its success with additional projects to contribute to India's goal of producing 100 GW of solar power by 2022.</li> </ul> <p>→ <b><u>International standards increasingly being adopted within government regulations and guidelines</u></b></p> <ul style="list-style-type: none"> <li>• <b>There is evidence that some private sector companies in India are adopting international standards with respect to resource and energy efficiency</b>, leading to reduced emissions and reducing the demand for key inputs to production, such as water. For example, in the cement and construction industries in India, IFC provided advisory support to assist private companies qualify for GreenCo and GreenPro ratings across their facilities.</li> </ul> <p>→ <b><u>Private firms have greater technical capacity or access to technical assistance to invest in responses to food-water-energy challenges and trade-offs</u></b></p> <ul style="list-style-type: none"> <li>• <b>IFC is working with private sector companies to improve energy and water efficiency</b> in the Indian agriculture sector (sugar in Rupapur, Uttar Pradesh), the cement and glazing industries and the textiles industry. The work builds on experience in the Bangladesh textile industry under the successful Partnership for Cleaner Textiles (PaCT) program and previous resource efficiency work undertaken by IFC in the Indian industrial sector.</li> </ul>

<b>Key players/ relationships in India</b>	<ul style="list-style-type: none"> <li>• Bihar Disaster Management Department</li> <li>• Bihar State Disaster Management Authority</li> <li>• Bihar Water Resources Department</li> <li>• Central Groundwater Board</li> <li>• Central Water Commission</li> <li>• Indian Institute of Technology, Delhi</li> <li>• Indian Institute of Technology, Guwaharti</li> <li>• Institute of Social Studies Patna, Bihar</li> <li>• International Food Policy Research Institute</li> <li>• Ministry of Agriculture</li> <li>• Ministry of Environment, Forests and Climate Change (ICIMOD nodal ministry)</li> <li>• Ministry of Power</li> <li>• Ministry of Water Resources, River Development and Ganga Rejuvenation</li> <li>• National Institution for Transforming India (NITI Aayog)</li> <li>• National Mission Clean Ganga</li> <li>• TERI University, Delhi</li> <li>• Water Resources Department, Bihar</li> </ul>
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## Nepal Country Brief

### Australia's support for increased water, food and energy security through the Sustainable Development Investment Portfolio (SDIP)

<b>Australia's Goal</b> (long-term impact)	<b>Increased water, food and energy security</b> in South Asia to facilitate low carbon economic growth and climate resilient livelihoods, benefiting the poor and vulnerable, particularly women and girls.
<b>Australia's Objective</b> (end-of-strategy (2024))	<b>Improved regional cooperation in the integrated management of water, food and energy resources</b> in the sub-region – addressing the effects of climate change and the roles and interests of women and girls.
<b>Australia's Outcomes for SDIP2</b> (by 2020)	<ol style="list-style-type: none"> <li>1. Strengthened practices for regional cooperation</li> <li>2. Critical new knowledge generated and used for regional cooperation</li> <li>3. Improved regional enabling environment, including for private sector engagement</li> </ol>
<b>Australia's budget for SDIP</b>	SDIP1 (2012-2016) - \$45 million SDIP2 (2016-2020) - \$42 million committed
<b>Timeframe</b>	12-year design to 2024, implemented through four-year funding commitments.
<b>Delivery Strategy</b>	<p><b>Through SDIP, Australia is investing in the work and capabilities of seven organisations (a 'portfolio' of partners)</b> engaged across three inter-related sectors: water resource management, agricultural productivity, and energy access and efficiency in South Asia.</p> <p><b>SDIP is underpinned by a 12-year investment strategy, with three phases of financial investment from DFAT.</b> Each four-year phase provides an opportunity for DFAT to tighten the focus for impact and, where necessary, to recalibrate the mix of investments and the geography of the investments. The fact that the strategy is designed for 12 years – and that partners design a program to serve the overall portfolio objectives – reduces the need for an extensive design period at the start of each phase and ensures that momentum is maintained. It also supports trust building in the region, as partners are considered to be committed to the long term.</p> <p><b>The portfolio approach is a shift away from activity-based engagements to one where DFAT interacts with its partners on a more strategic, policy and outcomes level,</b> with the approach also actively leveraging Australia's diplomatic presence in the region.</p> <p><b>SDIP also applies a structured and deliberate approach to partnerships between DFAT and SDIP partners.</b> This recognises that solutions to complex issues (such as rising water, energy and food insecurity) requires cross sectoral/multi-stakeholder collaborations of diverse but aligned organisations, contributing from their realms of strength, and that these are optimised by working to agreed shared objectives. Authentic partnership actively moves away from a more traditional contractor–service provider model, recognising this often leads to an entrenched power imbalance which stifles openness, risk sharing, learning opportunities and innovation.</p>

<p><b>SDIP2 partners and their work in Nepal (all are active in Nepal)</b></p>	<p><b>Australian Centre for International Agricultural Research (ACIAR)</b></p> <ul style="list-style-type: none"> <li>Improving the productivity and climate resilience of agricultural systems in the Eastern Gangetic Plains through the promotion of conservation agriculture.</li> </ul> <p><b>Commonwealth Scientific and Industrial Research Organisation (CSIRO)</b></p> <ul style="list-style-type: none"> <li>Strengthening the technical capacity of water sector managers to support cooperative decision making on regional water resources and building the knowledge base through scientific research.</li> </ul> <p><b>International Centre of Excellence in Water Resource Management (ICE WaRM)</b></p> <ul style="list-style-type: none"> <li>Building the capacity and technical skills of water sector managers and policy makers to enhance cooperative decision making.</li> </ul> <p><b>International Centre for Integrated Mountain Development (ICIMOD)</b></p> <ul style="list-style-type: none"> <li>Supporting resilience of mountain communities in the Hindu Kush Himalaya through improved scientific understanding of resource and social issues.</li> </ul> <p><b>International Finance Corporation (IFC)</b></p> <ul style="list-style-type: none"> <li>Facilitating investment in sustainable energy (hydropower, solar and energy efficiency) and improving the enabling environment for the private sector.</li> </ul> <p><b>South Asia Water Initiative of the World Bank (SAWI)</b></p> <ul style="list-style-type: none"> <li>Assessing water sector issues, promoting regional cooperation and policy dialogue, and provision of technical assistance.</li> </ul> <p><b>The Asia Foundation (TAF)</b></p> <ul style="list-style-type: none"> <li>Undertaking political economy analysis and facilitating inclusive dialogue among state, civil society and market actors.</li> </ul>
<p><b>Context for SDIP partner engagement in Nepal</b></p>	<p><b>Nepal is a one of the lowest-income countries in Asia and faces many development challenges including limited access to energy and poor infrastructure.</b> Economic growth rates are low relative to other South Asia countries and it has a large net trade deficit. Nepal is a net importer of food; <b>agricultural productivity is low</b>, and the country faces relatively high levels of malnutrition.</p> <p><b>Although Nepal has significant hydropower production potential</b> (40 times greater than current national electricity demand) <b>it is a net importer of energy</b> (petroleum and electricity). <b>Nepal has faced chronic energy shortages over the past decade and energy efficiency is low by world standards</b>, which has constrained economic growth. Nepal's significant untapped hydropower potential represents one of its major economic assets that could potentially generate significant export income and help underpin economic development in the country.</p> <p><b>Nepal is highly vulnerable to the impacts of climate change</b>, especially the effects of melting glaciers and changes to seasonal flow regimes (impacting downstream irrigation users and potentially future hydropower production). The changes in the cryosphere and increased rainfall intensity have already increased flood hazards and many communities face heightened extreme flood risk, especially from glacial lake overflow events.</p>

<p>Highlights of key results achieved to date in Nepal for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 1]</b></p>	<p><b><u>Outcome 1: Strengthened practices for regional cooperation</u></b></p> <p>→ <b><u>New tools and approaches to manage natural resources</u></b></p> <ul style="list-style-type: none"> <li>• <b>Integrated Water Resource Management (IWRM) principles are being used</b> to develop the Kamala Basin Plan, with technical support being provided by SDIP partners including CSIRO and ICE WaRM. This ensures that the economic, environmental, and social impacts of managing the water resource can be factored in to decision-making;</li> <li>• <b>Flood forecasting tools and early warning systems have been developed and are being used</b>, providing early warning to downstream communities of flash floods. For example, in August 2017, an alarm from a flood warning system in Bardibas, Nepal was disseminated to communities downstream in Bhitthamore, Bihar (India). The alarm was received four hours before flood waters arrived, providing time for these communities to move to higher ground and leading to avoided losses of an estimated USD 0.7 million;</li> <li>• Trials of <b>Conservation Agriculture-based System Intensification (CASI) practices</b> in the Terai region have delivered impressive results in terms of reduced inputs (water, energy and labour) per unit of output, improved yields and increased farm incomes. This is in an area where agricultural productivity is generally low and farming systems are unsustainable;</li> </ul> <p>→ <b><u>Improved technical capacity and evidence of ownership of new approaches</u></b></p> <ul style="list-style-type: none"> <li>• <b>IWRM principles have been embedded in key policy documents</b> including Nepal's National Water Policy (released 2017), demonstrating a government commitment to understanding and considering economic, environmental and social trade-offs associated with the management of water resources;</li> <li>• <b>Community-based flood early warning systems (CBFEWS)</b> have been integrated into local disaster management planning in four Koshi Basin villages in Ratu Khola and there is evidence that local communities have invested their own money to maintain and repair their CBFEWS instruments;</li> </ul> <p>→ <b><u>Increased availability of data and improved data sharing practices</u></b></p> <ul style="list-style-type: none"> <li>• <b>The Koshi Basin Information System (ICIMOD)</b> provides up-to-date data on climate variability, water and agriculture, and socioeconomic dynamics. This promotes collaboration among stakeholders of the Koshi Basin;</li> <li>• Evidence of <b>real-time data sharing between upstream Nepal and downstream Bihar</b>, including during the 2017 flood season;</li> <li>• <b>Data from the recently released HKH Assessment is available</b> to policy makers and practitioners through the HKH Climate and Hydrology Visualisation and Access Portal (HI-CHAP);</li> </ul> <p>→ <b><u>Policy dialogue, including consideration of climate change and gender</u></b></p> <ul style="list-style-type: none"> <li>• Australia and Nepal have established a <b>Joint Advisory Committee (JAC) on Water Resources Management</b> to guide Australia's water sector development assistance and is an increasingly useful vehicle for discussing strategic government to government initiatives;</li> <li>• The conference <b>"Resilient Hindu Kush Himalaya: Developing Solutions towards a Sustainable Future for Asia"</b> in December 2017 brought stakeholders from different levels together to discuss science, policy and practice, and incorporated a specific session on gender;</li> </ul>
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<p>Highlights of key results achieved to date in Nepal for SDIP2 (2016-2020)</p> <p><u>[SDIP2 Outcome 2]</u></p>	<p><b><u>Outcome 2: Critical new knowledge generated and used for regional cooperation</u></b></p> <p>→ <b><u>New knowledge is being generated</u></b></p> <ul style="list-style-type: none"> <li>• TAF and its partner ‘Institute for Social and Environmental Transition – Nepal’ (ISET-N) launched ‘<b><i>Fragility, Complexity and Development: a political economy analysis of the Koshi basin</i></b>’ in February 2018. The report aims to develop, update and further unpack the complex dynamics, interactions and concerns in the Koshi Basin;</li> <li>• TAF produced ‘<b><i>The Price of Power: the political economy of electricity trade and hydropower in eastern South Asia</i></b>’ which explores the politics and economics of prospective electricity trade between Bangladesh, Bhutan, India and Nepal;</li> </ul> <p>→ <b><u>New knowledge underpins dialogue on cooperation and decision-making</u></b></p> <ul style="list-style-type: none"> <li>• ICIMOD research and advice was the driver for the Government of Nepal allocating funds for <b>Shardu Khola as a priority national urban watershed</b>. The investment areas are: a) sediment management structures; b) green technology development and implementation; c) spring recharge and water source protection and catchment restoration; and d) study of water sources and availability;</li> <li>• Studies by ICIMOD and SAWI have led to improvements in <b>river basin planning processes</b> in Nepal, and a <b>more climate-resilient design</b> for the Upper Arun Hydropower Project. The studies have led to greater understanding of climate resilience in hydropower, as well as the impacts of eleven (11) proposed hydropower and water storage development projects in the Koshi Basin;</li> </ul> <p>→ <b><u>New knowledge improves the understanding of climate change and gender issues</u></b></p> <ul style="list-style-type: none"> <li>• The Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP) has produced a comprehensive assessment of the Hindu Kush Himalaya (HKH) region. <b>The HKH Assessment is the most comprehensive study of key development issues in the HKH region</b>, including the impact of climate change. It includes contributions from more than 300 scientists, including from ICIMOD;</li> <li>• <b>Other knowledge products</b> that are of relevance to Nepal include: <ul style="list-style-type: none"> <li>○ A study on <i>Gender-inclusive Good Practices in Disaster Risk Reduction and Livelihood Improvement in the Koshi Floodplain</i> (ICIMOD);</li> <li>○ IFC has commenced a Cumulative Impact Assessment study in the Trishuli Basin to determine the basin level hydrological, environmental and social impacts of multiple hydro developments under construction across the basin;</li> <li>○ IFC has conducted a study on Nepal’s hydropower benefits sharing mechanism (Local Shares Practices). This study provides the first set of consolidated information on local shares practices in Nepal;</li> </ul> </li> </ul>
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<p>Highlights of key results achieved to date in Nepal for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 3]</b></p>	<p><b><u>Outcome 3: Improved regional enabling environment, including for private sector engagement</u></b></p> <p>→ <b><u>Increased access to finance or other resources</u></b></p> <ul style="list-style-type: none"> <li>• An <b>MoU</b> was signed between IFC and the Nepal Department of Electricity Development and Ministry of Energy <b>for the preparation of up to three medium-sized (50 – 500 MW) hydropower projects;</b></li> </ul> <p>→ <b><u>International standards increasingly being adopted within government regulations and guidelines</u></b></p> <ul style="list-style-type: none"> <li>• The Government of Nepal has adopted the <b>Hydropower Environmental Impact Assessment (EIA) guidelines</b> (following support from IFC and ICIMOD), demonstrating a commitment to ensure socially and environmentally sustainable development of hydropower resources;</li> </ul> <p>→ <b><u>Private firms have greater technical capacity or access to technical assistance to invest in responses to food-water-energy challenges and trade-offs</u></b></p> <ul style="list-style-type: none"> <li>• <b>There is evidence of increased resource efficiency in the Nepal cement industry,</b> resulting in significant reductions in diesel and electricity use and reduced production costs;</li> </ul> <p>→ <b><u>New policies and regulations are increasingly gender-responsive</u></b></p> <ul style="list-style-type: none"> <li>• <b>The Nepal Hydropower EIA guidelines</b> include international-standard environmental and social practice and benefit-sharing standards, as well as mainstreaming an inclusive and gender-sensitive approach into decision-making processes;</li> <li>• Gender equity considerations are explicitly captured within the Government of Nepal's <b>National Water Policy;</b></li> <li>• The <b>CBFEWS Telemetry Resource Manual</b> was reviewed to integrate gender and social analysis as an integral part of risk, vulnerability, and capacity assessment;</li> </ul>
<p><b>Key players/relationships in Nepal</b></p>	<ul style="list-style-type: none"> <li>• Department of Agriculture (DOA)</li> <li>• Department of Electricity Development</li> <li>• Department of Hydrology and Meteorology (DHM)</li> <li>• Department of Irrigation (DOI)</li> <li>• Department of Soil Conservation and Watershed Management (DSCWM)</li> <li>• Department of Water Induced Disaster Management (DWIDM)</li> <li>• International Centre for Integrated Mountain Development (ICIMOD)</li> <li>• Ministry of Agricultural Development</li> <li>• Ministry of Energy</li> <li>• Ministry of Irrigation (MOI)</li> <li>• Ministry of Population and Environment</li> <li>• Ministry of Science, Technology and Environment</li> <li>• Ministry of Water Supply and Sanitation</li> <li>• Nepal Development Research Institute</li> <li>• Nepal Water Conservation Foundation</li> <li>• The Asia Foundation (TAF)</li> <li>• Water and Energy Commission Secretariat (WECS)</li> </ul>

### Pakistan Country Brief

## **Australia's support for increased water, food and energy security through the Sustainable Development Investment Portfolio (SDIP)**

<b>Australia's Goal</b> (long-term impact)	<b>Increased water, food and energy security</b> in South Asia to facilitate low carbon economic growth and climate resilient livelihoods, benefiting the poor and vulnerable, particularly women and girls.
<b>Australia's Objective</b> (end-of-strategy (2024))	<b>Improved regional cooperation in the integrated management of water, food and energy resources</b> in the sub-region – addressing the effects of climate change and the roles and interests of women and girls.
<b>Australia's Outcomes for SDIP2</b> (by 2020)	<ol style="list-style-type: none"> <li>1. Strengthened practices for regional cooperation</li> <li>2. Critical new knowledge generated and used for regional cooperation</li> <li>3. Improved regional enabling environment, including for private sector engagement</li> </ol>
<b>Australia's budget for SDIP</b>	SDIP1 (2012-2016) - \$45 million SDIP2 (2016-2020) - \$42 million committed
<b>Timeframe</b>	12-year design to 2024, implemented through four-year funding commitments.
<b>Delivery Strategy</b>	<p><b>Through SDIP, Australia is investing in the work and capabilities of seven organisations (a 'portfolio' of partners)</b> engaged across three inter-related sectors: water resource management, agricultural productivity, and energy access and efficiency in South Asia.</p> <p><b>SDIP is underpinned by a 12-year investment strategy, with three phases of financial investment from DFAT.</b> Each four-year phase provides an opportunity for DFAT to tighten the focus for impact and, where necessary, to recalibrate the mix of investments and the geography of the investments. The fact that the strategy is designed for 12 years – and that partners design a program to serve the overall portfolio objectives – reduces the need for an extensive design period at the start of each phase and ensures that momentum is maintained. It also supports trust building in the region, as partners are considered to be committed to the long term.</p> <p><b>The portfolio approach is a shift away from activity-based engagements to one where DFAT interacts with its partners on a more strategic, policy and outcomes level,</b> with the approach also actively leveraging Australia's diplomatic presence in the region.</p> <p><b>SDIP also applies a structured and deliberate approach to partnerships between DFAT and SDIP partners.</b> This recognises that solutions to complex issues (such as rising water, energy and food insecurity) requires cross sectoral/multi-stakeholder collaborations of diverse but aligned organisations, contributing from their realms of strength, and that these are optimised by working to agreed shared objectives. Authentic partnership actively moves away from a more traditional contractor–service provider model, recognising this often leads to an entrenched power imbalance which stifles openness, risk sharing, learning opportunities and innovation.</p>



<p><b>SDIP2 partners and their work in Pakistan</b></p>	<p><b>Commonwealth Scientific and Industrial Research Organisation (CSIRO)</b></p> <ul style="list-style-type: none"> <li>Strengthening the technical capacity of water sector managers to support cooperative decision making on regional water resources and building the knowledge base through scientific research.</li> </ul> <p><b>International Centre of Excellence in Water Resource Management (ICE WaRM)</b></p> <ul style="list-style-type: none"> <li>Building the capacity and technical skills of water sector managers and policy makers to enhance cooperative decision making.</li> </ul> <p><b>International Centre for Integrated Mountain Development (ICIMOD)</b></p> <ul style="list-style-type: none"> <li>Supporting resilience of mountain communities in the Hindu Kush Himalaya through improved scientific understanding of resource and social issues.</li> </ul> <p><b>International Finance Corporation (IFC)</b></p> <ul style="list-style-type: none"> <li>Facilitating investment in sustainable energy (hydropower, solar and energy efficiency) and improving the enabling environment for the private sector.</li> </ul> <p><b>South Asia Water Initiative of the World Bank (SAWI)</b></p> <ul style="list-style-type: none"> <li>Assessing water sector issues, promoting regional cooperation and policy dialogue, and provision of technical assistance.</li> </ul> <p><b>The Asia Foundation (TAF)</b></p> <ul style="list-style-type: none"> <li>Undertaking political economy analysis and facilitating inclusive dialogue among state, civil society and market actors.</li> </ul> <p><i>Other SDIP partners active in Pakistan, but not supported by SDIP2 funding:</i></p> <p><b>Australian Centre for International Agricultural Research (ACIAR)</b></p>
<p><b>Context for SDIP partner engagement in Pakistan</b></p>	<p><b>Pakistan remains one of the lowest performers in South Asia for human development indicators, especially education and nutrition.</b> Gender disparities persist in most sectors and Pakistan has one of the lowest female labour force participation rates in the region. An estimated 144 million people in Pakistan either do not have access to electricity from the grid at all, or have unreliable access, with the annual cost estimated at 2-4% of the GDP (in terms of lost productivity).</p> <p><b>Pakistan is heavily reliant on surface and groundwater flows of the Indus River Basin to support food, energy and economic security.</b> Agriculture is the second-largest sector of the Pakistani economy, with more than 60 per cent of the population directly or indirectly linked with agriculture for their livelihood. The agricultural sector is highly dependent on irrigated water sourced from the Indus River. However, unsustainable use of groundwater, changes in the seasonality of inflows, and limited storage (30 days of use) means that water is increasingly scarce.</p> <p><b>Current water shortages for agriculture, industry and the environment are set to be exacerbated by the impacts of climate change.</b> The <b>HKH Assessment</b> states that 36 per cent of the glaciers in the Hindu Kush Himalaya are forecast to disappear by 2100, even if global warming is limited to 1.5 degrees Celsius. The Indus Basin is expected to be severely impacted, given that almost 80 per cent of the water in the Indus River is fed by snow and glacier melt.</p>

<p>Highlights of key results achieved to date in Pakistan for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 1]</b></p>	<p><b><u>Outcome 1: Strengthened practices for regional cooperation</u></b></p> <p>→ <b><u>New tools and approaches to manage natural resources</u></b></p> <ul style="list-style-type: none"> <li>• The <b>Indus River System Model (developed by CSIRO)</b> has been completed and has been endorsed by the SDIP Pakistan Strategic Advisory Group. It is considered by the Strategic Advisory Group to have strong potential as a common water modelling framework for water resource management in Pakistan, and one that can be used to assess the impact of different climate change, water sharing and infrastructure development scenarios on river flows.</li> <li>• <b>Flood forecasting tools and early warning systems have been developed and are being used (developed by ICIMOD)</b>, providing early warning to downstream communities of flash floods and Glacial Lake Outburst Floods (GLOFs). For example, in August 2017 in Gilgit Baltistan, an early flood warning during a flood event allowed 2,800 people from 350 households to flee to higher ground with their livestock.</li> </ul> <p>→ <b><u>Improved technical capacity and evidence of ownership of new approaches</u></b></p> <ul style="list-style-type: none"> <li>• <b>Pakistan’s first National Water Policy was released in April 2018.</b> Technical support provided by SDIP partners (including CSIRO and ICE WaRM) over several years is consistent with key elements of the policy, such as the shift from sectoral to integrated approaches to water management, and the importance of importance of including women in decision-making processes.</li> <li>• <b>A successful pilot of community-based early flood warning systems (CBFEWS) has led to scaling out by at least one provincial government.</b> The Chief Minister of Gilgit-Baltistan has committed to scaling out CBFEWS in disaster-prone areas and integrating the approach into their disaster management strategy.</li> <li>• The Pakistan Meteorological Department and ICIMOD have <b>jointly developed the Indus Flood Outlook</b>, which focuses on the Chenab Basin.</li> </ul> <p>→ <b><u>Increased availability of data and improved data sharing practices</u></b></p> <ul style="list-style-type: none"> <li>• A <b>centralised hydrological data management system (Hydstra)</b> has been implemented across three provincial irrigation departments of Punjab, Sindh and Khyber Pakhtunkhwa (CSIRO);</li> <li>• <b>Data from the recently released HKH Assessment is available</b> to policy makers and practitioners through the HKH Climate and Hydrology Visualisation and Access Portal (HI-CHAP);</li> <li>• <b>New and/or improved water datasets have been developed</b>, including the digitised bore log lithology for the Indus Basin Irrigation System (IBIS) and updates to the Agricultural Productions Systems Simulator (APSIM) (CSIRO);</li> </ul> <p>→ <b><u>Increasing policy dialogue, including consideration of climate change and gender</u></b></p> <ul style="list-style-type: none"> <li>• The <b>Upper Indus Basin Network Dialogue</b> has fostered science-based dialogue among the four riparian countries with respect to present and future water availability, and the impact of climate change has been central to the dialogue.</li> <li>• Through the <b>Indus Basin Knowledge Forum</b> (supported by SAWI and ICE WaRM), there is evidence of greater information exchange.</li> </ul>
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<p>Highlights of key results achieved to date in Pakistan for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 2]</b></p>	<p><b><u>Outcome 2: Critical new knowledge generated and used for regional cooperation</u></b></p> <p>→ <b><u>New knowledge is being generated</u></b></p> <ul style="list-style-type: none"> <li>• In February 2018 TAF launched <b><i>‘The Political Economy of Agricultural Water Use in Lower Indus Basin’</i></b>, which considers the political and economic factors that influence water governance decisions in the Lower Indus Basin and identifies potential drivers of change to bring about policy reform;</li> <li>• SAWI has been leading a study on <b>groundwater in the Indus Basin</b>, particularly to map aquifers in upper and central Punjab;</li> <li>• Analysis conducted with University of Agriculture Faisalabad provided <b>information on yield gaps and driving abiotic factors in the Punjab rice-wheat system</b>, which will allow the Government of Pakistan to make better informed policies that integrate both agriculture and water considerations (CSIRO);</li> </ul> <p>→ <b><u>New knowledge underpins dialogue on cooperation and decision-making</u></b></p> <ul style="list-style-type: none"> <li>• The Joint Secretary of MoWR requested the <b>Indus River System Model be used to analyse scenarios for potential infrastructure developments in the Indus River</b>. Preliminary analysis of the results informed high-level discussions in key government agencies, including the MoWP and MoWR;</li> </ul> <p>→ <b><u>New knowledge improves the understanding of climate change and gender issues</u></b></p> <ul style="list-style-type: none"> <li>• The Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP) has produced a comprehensive assessment of the Hindu Kush Himalaya (HKH) region. <b>The HKH Assessment is the most comprehensive study of key development issues in the HKH region</b>, including the impact of climate change. It includes contributions from more than 300 scientists, including from ICIMOD;</li> <li>• A joint research proposal on <b><i>‘Understanding climate change adaptation in the Indus Basin’</i></b> was finalised by the Indus Forum Working Group, and includes scientists from all four riverine Indus Basin countries;</li> <li>• Key actors in Pakistan (Glacier Monitoring and Research Centre - Water and Power Development Authority, National Engineering Services Pakistan) and the research community have increased <b>understanding of uncertainties related to the prediction of seasonal flows into major surfaces storages</b> (CSIRO);</li> <li>• With support from CSIRO, the University of Agriculture Faisalabad has designed <b>a research project to explore gender issues in groundwater management</b> and the impacts on livelihoods of combined surface and groundwater-use decisions;</li> </ul>
<p>Highlights of key results achieved to date in Pakistan for SDIP2 (2016-2020)</p> <p><b>[SDIP2 Outcome 3]</b></p>	<p><b><u>Outcome 3: Improved regional enabling environment, including for private sector engagement</u></b></p> <p>→ <b><u>Increased access to finance or other resources</u></b></p> <ul style="list-style-type: none"> <li>• IFC issued a <b><i>‘Pakistan Solar Developers’ Guide</i></b> which provides information to those who are implementing or intending to invest in solar photovoltaic (PV) power plants in Pakistan;</li> <li>• IFC has completed the first phase of <b>a study on distributed electricity generation potential in industrial estates</b>. This includes information on technical potential and barriers for adoption of solar PV from two industrial zones (220 facilities);</li> </ul> <p>→ <b><u>International standards increasingly being adopted within government regulations and guidelines</u></b></p>

	<ul style="list-style-type: none"> <li>• IFC's Hydro Advisory program completed a Strategy for Sustainable Hydropower in the Jhelum-Poonch basin to support <b>best practice environmental and social safeguards for hydropower developments</b>;</li> </ul> <p>➔ <b><u>Private firms have greater technical capacity or access to technical assistance to invest in responses to food-water-energy challenges and trade-offs</u></b></p> <ul style="list-style-type: none"> <li>• IFC has commenced out-scaling of their successful <b>Partnership for Cleaner Textiles (PaCT)</b> program in Pakistan and have engaged with other sectors (packaging automotive, cement, chemicals, agri-business) to promote improvements in resource efficiency;</li> <li>• The Punjab provincial government has adopted and implemented a regulatory and institutional framework to reduce energy use in the industrial sectors by <b>drafting a Five-Year Energy Efficiency &amp; Conservation Strategy</b> – the first of its kind in Pakistan, as well as launching the <b>Energy Efficiency standards and labelling program</b> for fans and motors (with support from IFC);</li> <li>• IFC has facilitated capacity building of private sector investors in Pakistan hydropower through the <b>Hydropower Developer's Working Group (HDWG)</b>, established in 2017 with 20 hydropower developers;</li> </ul> <p>➔ <b><u>New policies and regulations are increasingly gender-responsive</u></b></p> <ul style="list-style-type: none"> <li>• Gender equity considerations are captured within the Government of Pakistan's National Water Policy, which explicitly refers to the importance of including women in decision-making. While this result is not directly attributable to SDIP, it is an issue that Australian partners (CSIRO and ICE WaRM), have been promoting with the Government for several years.</li> </ul>
<b>Key players/ relationships in Pakistan</b>	<ul style="list-style-type: none"> <li>• Economic Affairs Division (EAD) within the Ministry of Finance, Revenue, Economic Affairs, Statistics and Privatisation</li> <li>• Federal Flood Forecasting Commission (FFC)*</li> <li>• Glacier Monitoring and Research Centre, Water and Power Development Authority (GMRC)</li> <li>• Indus River System Authority (IRSA)*</li> <li>• Ministry of Water and Power (MoWP)*</li> <li>• Ministry of Water Resources (MoWR)*</li> <li>• National Disaster Management Authority (NDMA)</li> <li>• National Engineering Services Pakistan (NESPAK)</li> <li>• Pakistan Commission for Indus Waters (PCIW)*</li> <li>• Pakistan Council of Research in Water Resources (PCRWR)</li> <li>• Pakistan Meteorological Department (PMD)*</li> <li>• Provincial Irrigation Departments (Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan)*</li> <li>• Think-tanks and Civil Society Organisations including: <ul style="list-style-type: none"> <li>○ Hisaar Foundation</li> <li>○ Sustainable Development Policy Institute</li> <li>○ Worldwide Fund for Nature (WWF) – Pakistan</li> </ul> </li> <li>• University of Agriculture Faisalabad (UAF)</li> <li>• Water and Power Development Authority (WAPDA)*</li> </ul> <p><i>* Members of the SDIP Pakistan Strategic Advisory Group</i></p>