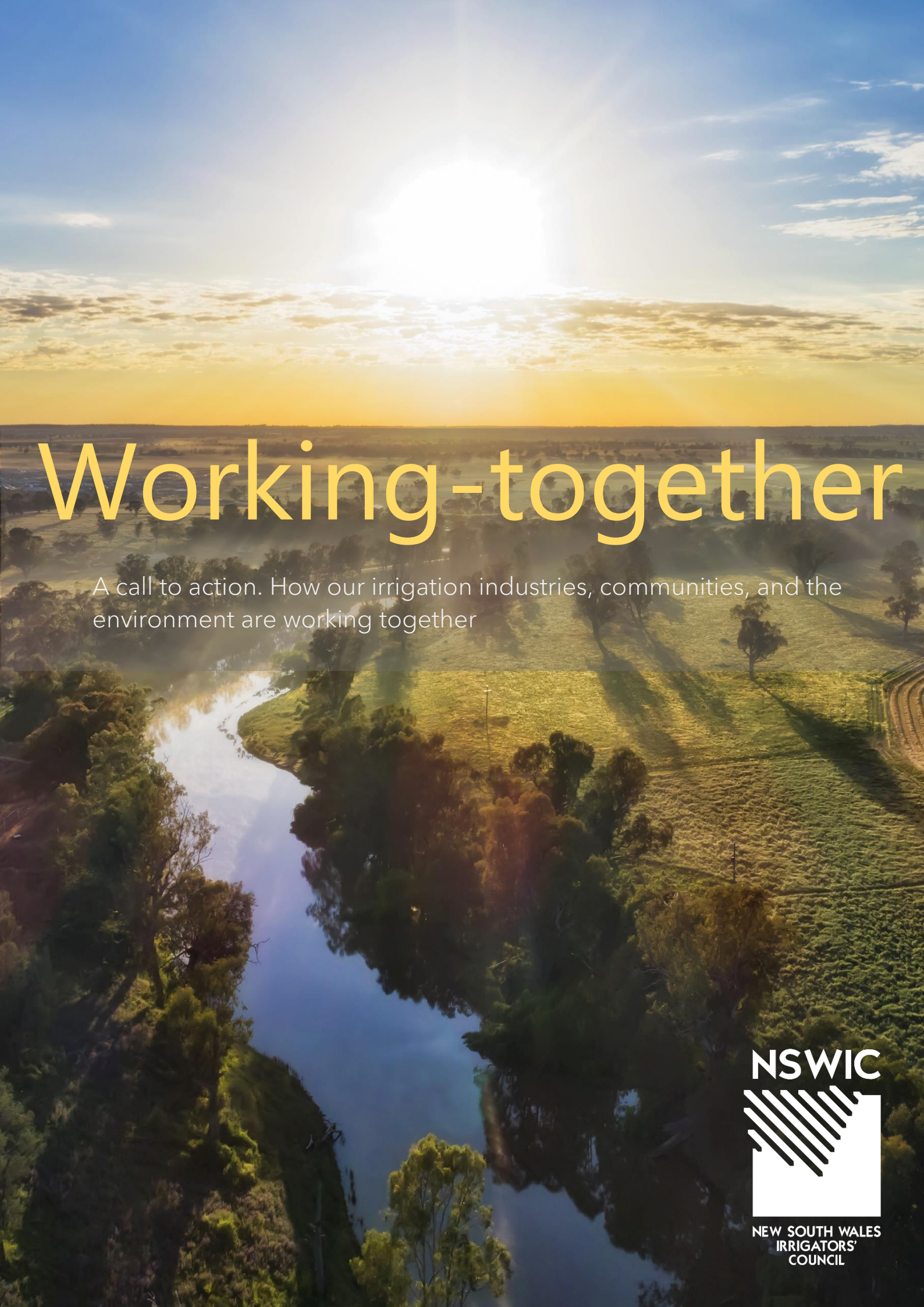


Working-together

A call to action. How our irrigation industries, communities, and the environment are working together

NSWIC

NEW SOUTH WALES IRRIGATORS' COUNCIL

Foreword …

This document calls for a much-needed paradigm shift in Australian water policy.

The polarising and divisive 'environment versus irrigators' paradigm needs to shift to one of co-operation and collaboration – of working together.

More than 2100 billion litres (gigalitres) of water has been transferred from supporting irrigated agriculture to improving environmental health under the Murray-Darling Basin Plan, but water reform to date has siloed agriculture and the environment as mutually exclusive. This thinking is old-school and must change.

We need a concerted effort to provide high quality food and fibre together with restoring and maintaining our natural ecosystems. In this best practice paradigm, the focus shifts from volumes of water recovery as the simplistic but divisive measure of success, to working together to improve environmental outcomes.

This document showcases several case studies on how irrigators and irrigation infrastructure operators are working as environmental stewards, alongside environmental water holders, scientists, First Nations and others to implement sustainable agricultural practices integrated with biodiversity, conservation and climate change initiatives.

This shows the desirability and feasibility of working together, and the willingness to do so - and that this is already happening on the ground. We call for politicians and policy makers to catch up - and keep up, to foster and support these approaches, and accurately recognise the level of integration on the ground.

We can all achieve a lot more by working together.

Indeed, working together offers our best hope of moving forward.

The industry is changing fast …

By 2050 the world population is expected to hit **9 billion people**. Right now, more than **800 million people** are going to bed hungry every night. The future of agriculture must ensure two things:

1. That **high-quality** food and fibre is **affordable** and **accessible** to all, and;

2. That **food** and **fibre** are produced **sustainably**.

Currently, Australian agriculture provides food for more than **60 million people**, as well as contributing more than **$69 billion** to the country's **GDP**.

Australian irrigation provides more than 90% of Australia's fruit, nuts and grapes; more than 76% of vegetables; 100% of rice and more than 50% of our dairy and sugar. In NSW alone, irrigated agriculture contributes between $2.45 and $3.5 billion per year to the economy. It is the **backbone of many regional communities**.

Additionally, our irrigators are globally recognised as the **world's most water-use efficient**, producing more crop per drop than any other nation. Australian rice growers use **50% less water** than the global average, and Australian cotton growers are **three times more water efficient** than the global average.

Our industry contributes to all the **UN Sustainable Development Goals**, such as Goal 2 (**zero hunger**), Goal 6 (**clean water and sanitation**), Goal 8 (**decent work and economic growth**), Goal 12 (**responsible consumption and production**), and Goal 13 (**climate action**).

NSWIC supports an **economy-wide target of net zero emissions by 2050**, preferably earlier. NSWIC also has an aspirational target of **carbon neutrality** for the NSW irrigation sector by **2030**.

Unfortunately, over the years, a paradigm has evolved that posits water users and the environment as mutually exclusive competitors in a battle for resources. This report hopes to dispel this myth, showcasing that agriculture and the environment are not mutually exclusive, and are in practice integrated, not siloed.

Dispelling the myth.

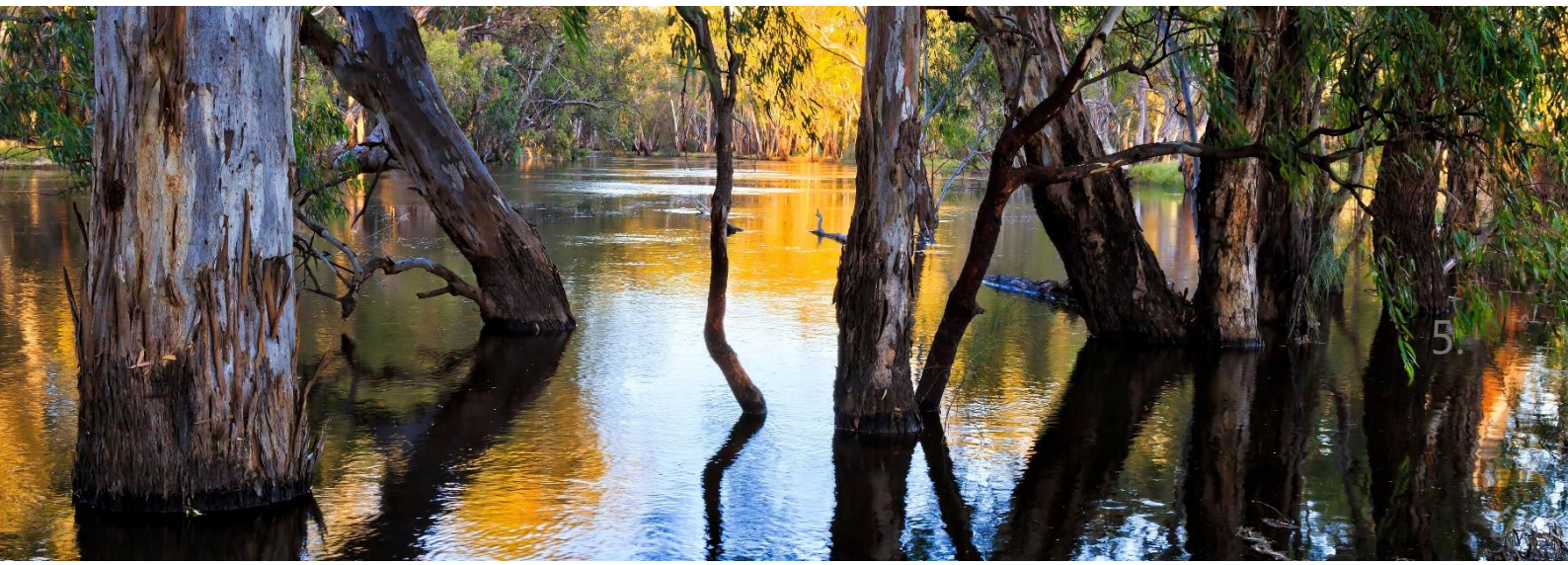
Our agricultural sector feels shifts in environmental patterns directly and immediately. Livelihoods are entirely dependent on climatic conditions and their relative predictability.

Despite what is often read in the media, irrigators foster genuine care for the environment. Not only are irrigators totally dependent on its balance, but view it as their responsibility to act as caretakers for Australia's ecosystems and their long-term wellbeing.

Water management in Australia is prioritised for the environment first (that is, to keep rivers running); then towns, followed by stock and domestic access on farms, and finally irrigation. Irrigators understand and respect this hierarchy, recognising that the only time they can irrigate is when environmental and community requirements are first met.

Multiple factors drive irrigators toward pursuing environmental outcomes, including that healthier ecosystems can increase efficiencies, and the global market is both demanding and rewarding sustainability.

Ultimately, however, our farming communities live and play in this environment, and care deeply about the health of rivers, floodplains and wetlands and their long-term sustainability. It is literally their backyard.



National parks are not enough.

To **improve environmental outcomes**, it is becoming widely recognised that we need to learn how to **manage the full landscape, across both public and private lands.**

While National Parks provide valuable refuge for native flora and fauna, more than **70 percent** of Australia's land is privately managed or owned. Australia's ecosystems **cannot be sustained in dedicated conservation areas alone**.

Landholders are acutely aware of this, and many have been actively fostering native biodiversity within their fence lines for generations, alongside other beneficial practices.

Recognising that the Murray-Darling Basin is a 'mosaiced' landscape is integral here. We need to look at the full landscape to optimise environmental outcomes. For example, irrigation infrastructure operators in the NSW Southern Basin alone cover more than 1.7 million hectares with more than 6000km of water delivery channels. This provides significant opportunity to work together, an opportunity already being successfully harnessed.

Below we explore cases where irrigators are demonstrating that working together is possible. Indeed, it is our best way forward.

Coleambally Irrigation

Environmental Water Delivery

Coleambally Irrigation Co-operative Limited (CICL) is a member-owned co-operative supplying water and drainage services throughout 457,000 hectares of the Murrumbidgee Valley. CICL has been using water channel infrastructure to deliver environmental water to natural wetlands since 2015.

CICL manages 1200 hectares of Crown land as the Coleambally Irrigation Biodiversity Reserve. Specifically, this reserve seeks to protect the habitats of Superb Parrots, Southern Bell Frogs and Bunyip Birds.

By using this infrastructure, environmental water can be delivered to sites which otherwise would only be inundated in extremely wet years. These areas often become refuge sites during drought years and offer high conservation value.

There have been 33 watering events over 13 sites in the last seven years.

The co-operative project also works with private landowners who own wetland areas that may struggle to receive typical high flows. If the landowner agrees, CICL can deliver environmental water to these sites and enhance ecological outcomes.

Photos supplied by Coleambally Irrigation

Photo supplied by Murray Irrigation

Murray Reconnected Floodplains project

Murray Irrigation Ltd (MIL) is a large private irrigation water delivery company, managing 824 gigalitres of NSW Murray Regulated River general security entitlements.

With more than 2000 private wetlands and 2000km of ephemeral creeks and rivers within its footprint, MIL is working with the NSW Department of Planning, Industry and Environment (DPIE) to use the MIL irrigation network to deliver water to environmental assets. Since 2001, more than 205 gigalitres of environmental water has been delivered to wetlands, ephemeral creeks and rivers within the MIL footprint.

The Murray Reconnected Floodplains project is taking this further, aiming to deliver an additional 600 gigalitres of environmental water, achieve significant environmental outcomes, secure water supply to downstream users, and protect the Barmah-Millewa Choke. This project delivered 96.4 gigalitres of environmental water in 2021-22, and MIL is seeking further funding for on-ground activities such as fish passageways and water delivery works that will increase environmental outcomes and the ability to more directly and efficiently deliver environmental water to floodplains, wetlands and waterways.

Fivebough swamp, near Leeton. Photo supplied by Murrumbidgee Irrigation

Murrumbidgee Irrigation

Murrumbidgee Irrigation (MI) is a large private irrigation company serving more than 3,093 landholdings across 378,911 hectares in the Murrumbidgee valley. Every year Murrumbidgee Irrigation works with environmental water holders to deliver environmental water when and where it is needed across its network.

Since 2015, MI has ensured more than 11 gigalitres of environmental water has reached identified target areas. Most environmental water in 2021-22 was delivered to Nericon Swamp, an important bird breeding site just outside of Griffith.

Other important wildlife habitats benefitting from Murrumbidgee Irrigation's delivery network include the Ramsar-listed Fivebough and Tuckerbil swamps in Leeton, and Campbells swamp in Griffith.

Fivebough and Tuckerbil Swamps provide important feeding and breeding habitat for the south-eastern Australian population of the endangered Australasian bittern. A total of 83 species of waterbirds have been identified at Fivebough Swamp and 69 species at Tuckerbil Swamp.

Photos courtesy of Renmark Irrigation Trust

Renmark Irrigation Trust

Globally recognised for Water Stewardship

The Renmark Irrigation Trust serves more 600 irrigators, covering more than 4900 hectares through the Renmark District in South Australia.

Since 2017, the Trust has delivered more than two gigalitres of water for the environment to 12 different sites, inundating 120 hectares. Delivering environmental water through existing infrastructure has the added benefit of cleaning natural silt build up in the pipes, which saves water and maintenance costs.

The Commonwealth Environmental Water Holder is now one of the largest customers of the Renmark Irrigation Trust.

In 2018, the Trust was the first irrigation area in the world to receive Gold Certification against the International Water Stewardship Standard of The Alliance for Water Stewardship (AWS) – a global membership of businesses, NGOs and the public sector that promotes and adopts sustainable water use practices. In 2020, it was the first irrigation scheme to be awarded the platinum level, the highest level of certification. Water Stewardship is defined as water use that is socially and culturally equitable, environmentally sustainable and economical beneficial.

The Trust continues to work alongside the Renmark Paringa Council, the Murray and Riverland Landscape Board, SA Department of Environment and Water, and

Plushs Bend south of Renmark - before and after environmental watering

Banrock Station

Photo supplied by Tim Field

Wine and Wetland Centre

Banrock Station, north-west of Berri in South Australia, is situated on more than 1000 hectares of internationally listed Ramsar floodplains.

Previous owners Hardy Wines said when they purchased the property in the 1990s that the site was overgrazed, over cleared and salinity-damaged, with a floodplain that was particularly popular with duck hunters. Hardy Wines set out to return the floodplain to its pre-European state by replicating the natural ebbs and flows of wet and dry years.

Since 2011 Banrock Station has been part of Accolade Wines, which has actively managed the wetland in harmony with its vineyard.

The wetland management has seen the return of a healthy functioning ecosystem through removing European carp and restoring native vegetation, fish, and birdlife. It is estimated that about 1.15 gigalitres of river water is saved every two years through the controlled wet/dry cycle.

Today, Banrock Station receives environmental water from the Commonwealth Environmental Water Holder and the South Australian Government's environmental water allocation to help meet its ecological objectives.

Banrock Station now implements a host of sustainable practices in its vineyard and wetland management including computerised sub-surface irrigation equipped with soil sensors and mulch spread around the vines to reduce evaporation losses.

Private inundations

Jeremy Morton

Jeremy Morton, Chairman of the National Irrigators Council and rice-grower at Moulamein in the NSW Murray valley, directed 1.675 gigalitres of his own irrigation water onto the ephemeral lake on his property in 2021-22 after purchasing water early in the season, getting a full allocation, and receiving ample rainfall.

Jeremy holds a licence to extract from the lake when needed, but until then the lake and its inhabitants will receive substantial benefits.

Kilter Rural

The Murray-Darling Basin Balanced Water Fund, a partnership between Kilter Rural, The Nature Conservancy and the Murray Darling Wetlands Working Group, demonstrates a new model to enhance water security for irrigators while restoring important local wetlands.

The Fund invests in permanent water rights for dual purpose: up to 60% of the water entitlements is leased to farmers, leaving up to 40% available to donate to the environment. Donations vary from year to year. When it's very dry, only 10% of the available water is donated to the environment, leaving 90% for farmers. When it is very wet, up to 40% is available for environmental use. This approach mirrors the boom and bust nature of much of the Basin's wetlands.

The Fund also collaborates with Commonwealth and State environmental watering managers, and four First Nations communities, to increase the scope of activities. Since inception in 2015 to June 2022, the Fund has donated more than eight gigalitres to support 44 watering events across 38 wetlands. Around 2300 hectares of wetland/floodplains have been inundated, biodiversity outcomes improved over 10,000ha and 17 threatened species supported. Another 5.4 gigalitres will donated in 2023.

Image courtesy of the Bitterns in Rice Project

Bitterns in rice

Coexistence of biodiversity and agriculture

The agricultural wetlands of the NSW Murray-Darling rice fields produce around one million tonnes of rice in most years, but they also support the largest breeding population of the Australasian Bittern (*Botauris poiciloptilus*) in the world.

The Australasian Bittern is a globally endangered species that thrives in the habitat conditions provided by rice-growing in the NSW Murrumbidgee and Murray valleys, which together make up the NSW Riverina region.

This bird, also known as the 'bunyip bird' for its booming call, has an estimated population of only 4000. Rice crops in the NSW Riverina are vital to its survival, generally supporting between 500 and 1000 mature individuals each year.

The Bitterns are not the only beneficiaries of these 'pop-up' wetlands. Ecological surveys have also observed thriving populations of the Southern Bell Frog, and the Australian Painted Snipe, Australia's only other globally endangered waterbird.

The Bitterns in Rice Project, a collaboration between the Ricegrowers' Association of Australia and Birdlife Australia, recognises a valuable opportunity to manage land and foster native fauna simultaneously.

The project hopes to learn more about this endangered species, monitor long-term populations and promote 'Bittern Friendly' rice growing practices to landholders.

These tips can include ensuring water is provided early enough in the season to accommodate for Bittern breeding patterns, installing thermal sensing on farm machinery to detect nesting animals, and maintaining a 'mosaiced' landscape with vegetation corridors as much as feasibly possible.

Hundreds of rice farmers now support the Bitterns in Rice Project, many of whom are both grateful and delighted for the opportunity to protect native fauna while maintaining their productivity.

Good Earth Cotton

Image courtesy of Cotton Australia

Ethical, traceable, climate positive cotton

In 2017, Danielle and David Statham from North-West NSW founded Good Earth Cotton® (GEC) to create garments entirely from traceable cotton that is sustainably grown.

GEC is climate positive - meaning it sequesters more carbon than it emits – and results in better soil health and water efficiency, while building soil biodiversity and maintaining high yield and quality of fibres.

Good Earth Cotton (GEC) reduces the environmental footprint through modern regenerative farming. These practices include ensuring that unused biomass is encouraged to naturally decompose, effective crop rotation and minimising tilling to protect long-term soil health, precision planting to save water, and data capture to measure the practices.

GEC cotton also uses FibreTrace® technology to trace every fibre, enabling GEC accredited cotton to be tracked from soil and cotton gin to the consumer, through to reuse and recycle.

So far, GEC has traced 85,000 bales as accredited Good Earth Cotton®, and seen:

38 million KG

of sequestered carbon

2.2 bales

Of cotton produced per ML of water

20,000ha

of farming land growing GEC

On-Farm Biodiversity, Boggabri NSW

Cotton farmers Robyn and John Watson from Boggabri planted trees along a kilometre of their riverbank in the 1970s and noticed the farm biodiversity substantially improved. Not only did the riverbank better hold its shape, but the increased habitat attracted a host of birds, bats and insects that helped keep pests down on the cotton crops. This meant that less pesticide was needed - reducing costs and improving the health of their soil and water.

Recognising these benefits, the Watsons established more vegetated corridors to act as spray drift barriers and connect biodiversity in the riparian zone.

The Watsons have now planted more than 20,000 trees through their property, installed nest boxes and retained trees with nesting hollows.

They have partnered with Landcare Australia and clothing company Country Road for their Biodiversity Project. This project involves planting 3.7 kilometres of tree lines along the Namoi River, specifically where bare banks are causing river turbidity.

The practices in place on the Watsons farm have paid off in three significant ways:

1. Environmental outcomes – Increased healthy populations of native flora and fauna, as well as improved soil and water quality.

2. Economic benefits – Natural pest control and spray barriers have reduced the costs of chemicals and improved agricultural efficiencies.

3. Social benefits – Chemical impacts are minimised, creating safer products for consumers and promoting long-term sustainability.

Photo courtesy of Country Road. Photographer Saskia Wilson

Billabong Restoration Project

Feli McHughes, NSW Irrigators Council

NSWIC is proud that Feli McHughes – Ngemba man and NSW Irrigators Council First-Nations Advisor - is leading a collaborative project that will restore billabongs and provide culturally-appropriate employment for indigenous communities.

This project will employ First Nations' community members as Billabong caretakers, focusing on the most socio-economically disadvantaged communities. Feli believes that providing culturally appropriate employment is an integral step in addressing social issues faced by Indigenous Australians.

Feli and the team from NSWIC are working alongside land and water holders in regional NSW to develop the project to *'heal country, heal mob'*.

Feli says that through First Nations' eyes, Billabongs are the kidneys of the river. They produce the antibiotics for the rivers' immune systems and are seen as having healing powers for people too.

Importantly, this project offers an important paradigm shift to recognise indigenous science in water management.

Circular Economy

Bega Valley Shire

The community of the Bega Valley Shire is hoping to be the first totally circular economy in Australia, with $100 million funded by private enterprise, the community and government to reach this goal by 2030.

In the wake of the 2019-20 bushfires and substantial economic losses from COVID19 restrictions, Bega Valley, led by Bega Cheese and the community of dairy farmers, has shifted its attention to climate resilience and sustainability.

Circular economies keep resources in use for as long as possible, before extracting materials at the end of their life to further regenerate products. This practice has been heavily implemented in Scandinavian countries with credible success.

A report by the World Economic Forum (WEF) in 2013 estimated that global cost savings from adopting a more circular economy could be more than USD $1 trillion per year by 2025.

In 2020, KPMG released a report commissioned by the CSIRO estimating that an Australian transition to circular economy across food, agriculture, transport and the built environment could boost Australia's GDP by AUD$23 billion by 2025.

Through a combination of water efficiency upgrades, renewable energy investment, effective material conversion and a host of other projects, Bega valley hopes to lead the Australian transition into sustainability and inspire other regions to follow suit.

Image courtesy of Will Russell