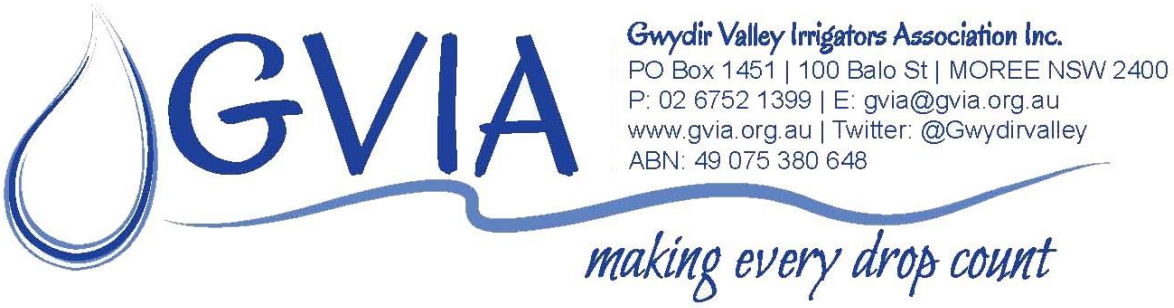

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Submission to:
House of Representatives Standing Committee on Agriculture and Water Resources

Inquiry into water use efficiency in Australian agriculture

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March 2017

Submission by:

Gwydir Valley Irrigators Association Inc

1. Purpose of this Submission

This document has been developed by the Gwydir Valley Irrigators Association (GVIA) on behalf of its members as a formal submission for consideration by the House of Representatives Standing Committee on Agriculture and Water Resources in their inquiry into Water Use Efficiency in Australian Agriculture.

This document represents the concerns views and experience of the GVIA members. However, each member reserves the right to express their own opinion and is entitled to make their own submission.

2. Recommendations

1. The Committee recognise the importance of the National Water Use in Agriculture RD&E Strategy and recommend the continued endorsement of the strategy by the Primary Industries Ministerial Council.
2. The Committee recognise that ground water entitlements are an important component of water use in Agriculture and that the committee support continued investment in irrigation infrastructure and on farm irrigation efficiency programmes available to all forms of entitlement.
3. The Government continue to fund programmes which support investment in irrigation infrastructure and on-farm irrigation efficiency programs but without the requirement to share savings with funding providers. Irrigators should be allowed to maintain 100% of water savings, to increase agricultural production. Infrastructure investments should be done in partnerships between government and irrigators and or irrigation scheme managers.
4. The committee recommend the continued support for national programmes such as the Smarter Irrigation for Profit project. Support for these projects will ensure research, development and extension is delivered efficiently and effectively. This will further enhance the adoption of best practice and reinforce the recognition of Australian irrigators as some of the world's most productive and efficient.
5. The Government review and update Sustaining the Basin; Irrigation Farm Modernisation and the Murray Darling Basin Regional Economic Diversification Programmes to better achieve objectives for all parties.
6. The committee recognise the importance of support for economic diversification. The committee recommend funding to support economic diversification focused on maintaining employment in regional communities and enhancing diversification of water use.
7. That the committee support the MDBA conclusions that some valleys are over recovered as the Government has bought too much water. The trade of excess water should be encouraged to support investment in improved irrigation water use efficiency, increased economic activity and to enable investment in measures to enhance river health.

3. Introduction

The Gwydir Valley Irrigators Association (GVIA) welcomes the opportunity to provide this submission to the House of Representatives Standing Committee on Agriculture and Water Resources for their inquiry into water use efficiency in Australian Agriculture.

We welcome this inquiry as an opportunity to highlight the initiatives growers are investing in to enhance water use efficiency and sustainability into the future. The GVIA have been project managing grower-led irrigation efficiency research since 2008 and believe that we are well positioned to provide good insight into improvements in irrigation water use efficiency in Australian agriculture.

It is important to note the critical contribution that irrigated agriculture makes to the social and economic wellbeing of regional communities and the broader Australian economy. Irrigated agriculture will be essential, if Australia is to actively contribute to the growing demand for food and fibre in Asia as well as meeting our own demands.

Agricultural producers are very aware of the need to utilise this valuable resource as efficiently as possible. A significant percentage of producers are actively pursuing best practice, the Australian cotton industry is recognised as some of the most productive producers worldwide[1]. However, with the increasing demand for environmental water requirements which has reduced the volume of water available to irrigators for production, irrigators will need to continue to innovate to push the returns per megalitre and maintain production levels of the past.

For example, the impact of environmental water purchases in the Murray Darling Basin cannot be more evident that in the Gwydir Valley. Gwydir irrigators have over-time provided 29% of general security entitlement and 13% of supplementary entitlement and 28.5% of high security entitlement for environmental use following a series of programs as presented in Table 1. This water was provided through a range of national and state based policy (like the local water sharing plan) and the Commonwealth Government's Water for the Future programme which was dominated by a 'no regrets' buy-back with minor contributions from infrastructure projects.

The Gwydir now has a reduced maximum production capability resulting from a shift from irrigated to dry land agriculture, at reduced yield return. The regional impact can be a reduction of 25-35% in area. Coupled with this is the significant social and economic decline in Moree and Collarenebri as detailed in the 2016 Northern Basin

[1] http://cottonaustralia.com.au/cotton-library/fact-sheets/cotton-fact-file-water

Review[2], where the region has lost nearly 200 jobs directly due to water recovery alone which is in addition to a declining regional population due to changes in labour requirements from agricultural and government employment[2,3,4]. These changes have altered the social structure of our region and placed pressure on local business to adapt, expand or close as well as services like schools.

Table 1: Summary of Water Reform

Year	Program	Volume of entitlement
1970	Creation of replenishment flow	5,000ML
1995	Murray-Darling Basin 1993/94 Interim Cap established to limit future growth in access	
1996	Voluntarily reduced their general security reliability by 5%, by establishing the original Gwydir Valley Environmental Contingency Allowance (ECA) of general security equivalent water.	25,000ML General Security
2004	Gwydir Regulated River Water Sharing Plan further reduced reliability by 4%, primarily through increasing the ECA and enhancing its use and storage provision. Rules created for the WSP also reduced access, particularly to supplementary flow previously known as high flow.	20,000ML General Security
2006	Lower Gwydir Groundwater Source Water Sharing Plan reduced groundwater entitlements from 68,000 megalitres to 28,700 megalitres.	39,300ML Groundwater
2008 +	NSW State Government has purchased general security entitlement as well as supplementary for wetlands recovery programme.	17,092ML General Security 3,141ML Supplementary
	NSW Government infrastructure works	1,249ML High Security
	Commonwealth buy-back program.	88,133ML General Security 20,451ML Supplementary
2016	Commonwealth infrastructure programs.	4,508ML High Security 1,392ML General Security
	TOTALS	5,757 High Security 156,617ML General Security (including ECA) 23,592 ML Supplementary

[2] https://www.mdba.gov.au/publications/mdba-reports/northern-basin-review-technical-overview-socio-economic-analysis
[3] https://www.mdba.gov.au/sites/default/files/pubs/630%20-%20NBR%20Community%20profile%20-%20Collarenebri.pdf
[4] https://www.mdba.gov.au/sites/default/files/pubs/630%20-%20NBR%20Community%20profile%20-%20Moree%20HR_0.pdf

In preparing for this submission, the GVIA are concerned that the complexity that is irrigation management maybe miss-represented by a focus only on water use efficiency. Water use efficiency cannot be considered in isolation from the other drivers that influence irrigation decision making. To present a balanced perspective of irrigation and water use efficiency in Australian agriculture, consideration must be given to all the production parameters; soil, crop, and climate, the reliability of the irrigation water resource, the cost to establish infrastructure and to the resources of labour and energy, as well as the key driver for many growers, productivity or yield. Our experience in grower-led research has lead us to further explore the nexus between each of these issues with interesting results.

Irrigation water use efficiency is best defined as production per megalitre of applied water. To enable equitable comparisons between irrigation systems in assessing their ability to provide water use efficiency outcomes whilst maintaining production, the GVIA utilised and therefore, recommends the adoption of Gross Production Water Use Index (GPWUI)[5]. This index combines total seasonal water use (rainfall and irrigation) with soil moisture and yield. This index means that comparisons can be made across years and across farms. The higher the GPWUI the more water efficient the crop.

The GVIA thank the committee for this opportunity to provide this submission and have provided seven recommendations for your consideration. We look forward to discussing our research and our submission in more detail at the Agriculture and Water Resources committee's public hearing in April 2017.

4. About the Association

4.1. Our region

The Gwydir Valley Irrigators Association (GVIA) represents in excess of 250 water entitlement holders in the Gwydir Valley, centred around the town of Moree in North-West New South Wales. Our mission is to build a secure future for its members, the environment and the Gwydir Valley community through irrigated agriculture.

The region is highly dependent on agriculture and in particular irrigated agriculture for economic activity contributing over 40% of Gross Regional Product, employing 20-30% of the population and accounting for almost 90% of exports from the Moree Plains Shire (Cotton Catchment Communities CRC Communities and People Series 2009).

The 2011 Agricultural Census estimates that the total value of agricultural commodities for the Moree Plans region was $911,951,079 up from $527,744,851 in the 2005-06

[5] For more information, see http://www.cottoninfo.com.au/sites/default/files/documents/Calculating%20water%20use%20fact%20sheet%20-%20May%202016.pdf

census. This is an estimated 7.83% of NSW's total agricultural production from a 1,040,021Ha principally used for agricultural crops[6].

The Gwydir is characterised as having low water reliability with the majority of water held as general security water with a reliability of 36% (that means irrigators could expect in the long-term over a third of their entitlement can be accessed). Supplementary water entitlement is somewhat more reliable with 55% but accounts for less than a quarter of the total volume. Groundwater reliability is considered 100%.

Environmental water has been held in the Gwydir prior to the first water Sharing Plan and is primarily used to contribute waterbird and fish breeding events and to maintain the condition and extent of the internationally recognised Gwydir Wetlands. Entitlements owned for environmental purposes totals more than 170,000ML as outlined in Table 1, which includes an Environmental Contingency Allowance of 45,000ML.

The main broad acre irrigated crop is cotton with irrigated wheat, barley and Lucerne also occurring depending on commodity prices the total broad acre irrigated area is approximately 90,000 ha (although recent analysis indicate that maximum planting area is now 70,000ha) but is rarely cropped in one year. In 2010-11 census data indicated the total production value of irrigated cotton was $623M and is estimated to be worth three times that to the local community using the Cotton Catchment Communities Research Corporation economic multiplier for cotton regions[7].

Currently there are also pecans, walnuts, oranges and olives being grown within the region covering approximately 1,500 hectares, generating an estimated $31M with considerable benefits to the local community as a high intensity, permanent crop. There is significant potential for expansion into horticulture and improvement in high security water utilisation on permanent cropping.

4.2. What we do

Our mission is to build a secure future for our members, the environment and the Gwydir Valley community through irrigated agriculture, we do this by making every drop count in the river or the aquifer, on-farm, for the environment, for our community[8].

GVIA members hold entitlements within the Gwydir regulated and un-regulated surface water areas, in addition to groundwater resources. All of which are managed through water sharing plans, which have been progressively developed since early 2000. Total river water availability for irrigation is 26% of the long-term average flows, although this has been reduced due to water recovery efforts for the Basin Plan and is estimated to be now 19% of long-term river flows. There is around 575,000ML

[6] 2010 2011 Agricultural Census Report – agdata cubes, 71210D0005-201011 Agricultural Commodities, Australia
[7] Social and Economic Analysis of the Moree Community, 2009. Cotton Catchment Communities CRC
[8] For more information, see our corporate video on https://vimeo.com/177148006

available to irrigators from regulated entitlement (high security, general security and supplementary water). There is also nearly 30,000ML available from groundwater aquifers. In addition, unregulated water is used for irrigation purposes with use well below the volumetric licences.

The Gwydir Valley Irrigators Association organisation is voluntary, funded by a cents/megalitre levy on regulated, unregulated and groundwater irrigation entitlement. In 2015/16 the levy was paid on more than 86% of the eligible entitlement (excludes entitlement held by the State and Federal Government).

Much of the activity the association revolves around negotiating with government at a Federal, State and Local level to ensure the rights of irrigators are maintained and respected. While the core activities of the Association are funded entirely through the voluntary levy, the Association does also undertake programs to maintain and improve the sustainability of members on-farm activities and from time to time, undertakes special projects, which can be funded by government or research corporations.

The Association is managed by a committee of 11 irrigators and employs a full-time executive officer and a part-time administrative assistant, as well as hosting a Project Officer funded through the Cotton Research and Development Corporation, the Gwydir Valley Cotton Growers Association and the GVIA.

The GVIA and its members, are members of both the National Irrigators Council and the NSW Irrigators Council.

4.3. Association Contacts

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Chairman:	Joe Robinson
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5. Terms of Reference

The Committee will inquire into and report on water use efficiency in Australian agriculture. The inquiry will have particular regard to:

a) adequacy and efficacy of current programs in achieving irrigation water use efficiencies
b) how existing expenditure provides value for money for the Commonwealth
c) possible improvements to programs, their administration and delivery
d) other matters, including, but not limited to, maintaining or increasing agriculture production, consideration of environmental flows, and adoption of world's best practice.

The following sections are intended to address the specific terms of references listed above.

5.1. Adequacy and efficiency of current programs

5.1.1. Smarter Irrigation for Profit

The National Water Use in Agriculture RD&E Strategy (one of five cross sector strategies) endorsed by the Commonwealth Primary Industries Ministerial Council (PIMC) covers dryland and irrigated farming systems across a wide range of industries. The intention of the initiative is to foster collaboration on a national basis, to strengthen Australia's position and to ensure that the delivery of Research, Development and Extension (RD&E) is efficient and effective.

A clear example of the positive impact of the strategy is the 'Smarter Irrigation for Profit' project funded by the Australian Department of Agriculture and Water Resources as part of its Rural Research and Development for Profit Programme[9].

The GVIA is an active participant in this project as a coordinator of farmer managed learning sites, or 'optimised irrigation' farms. This project has enabled the extension of six years of irrigation efficiency research within the valley, for a further two years (eight years' total). The primary focus has been irrigation system comparisons[10]. It has identified that water use efficiency is not solely about water, the importance of irrigation systems specifically oriented to soil, crop, water reliability and management constraints cannot be underestimated. In addition, it has demonstrated that these resources must be considered in unison with the resources of energy and labour.

[9] http://www.crdc.com.au/content/irrigating-profit-government-funds-cotton-dairy-rice-sugar-rd-6-may-2015

[10] http://www.gvia.org.au/IrrigationEfficiencyProgramme2.htm or our summary video, https://vimeo.com/174306570 or view documents on the GVIA thumb drive provided.

The GVIA research has confirmed that the suitability of different systems can be significantly impacted by seasonal conditions. The rainfall and temperature of the growing season will impact on the energy and water use of different systems in different ways; for example, in a hot dry season with very little or no rainfall the flood irrigation systems perform more efficiently than the pressurised lateral move or drip systems. However, in wet seasons the pressurised systems allow more flexibility and have been more efficient. The system which has produced the highest GPWUI is the lateral move, but in regions where irrigation water reliability is less than 50% such systems have a limited fit as the capital setup costs is more than $4,000/Ha can be difficult to justify the investment based only of water use efficiency improvements.

This research has demonstrated that there is no simple solution to the efficiency use of water in agriculture, producers will need to make irrigation investment decisions to suit their individual farm needs if they are to enhance their irrigation water use efficiency.

OUTCOMES FROM SMARTER IRRIGATION FOR PROFIT IN THE GWYDIR VALLEY:

AT THE 2016 AUSTRALIAN COTTON CONFERENCE, WHICH ATTRACTED APPROXIMATELY 1,500 DELEGATES FROM ACROSS ALL AUSTRALIAN COTTON GROWING REGIONS, THE GVIA PRESENTED TWO THREE-MINUTE THESIS ON THE GROWER-LED IRRIGATION RESEARCH RESULTS. THE GVIA ALSO MANNED A DISPLAY AT THE TRADE HALL SHOWCASING THE RESEARCH TO DELEGATES.

A FURTHER DEMONSTRATION OF THE CROSS COLLABORATION AND EXTENSION WAS SEEN AT THE 2017 GVIA GROWER-LED IRRIGATION RESEARCH FIELD DAY WHICH ATTRACTED 130 PEOPLE. COTTON, SUGARCANE AND HORTICULTURAL PRODUCERS AND CONSULTANTS FROM AS FAR AFIELD AS GRIFFITH IN THE SOUTHERN NSW AND TOWNSVILLE IN THE NORTHERN QLD TRAVELLED TO MOREE IN NORTHERN NSW FOR THE FIELD DAY. THE FIELD DAY INCLUDED PRESENTATIONS AND DEMONSTRATIONS OF NEW TECHNOLOGY AND PRESENTATIONS FROM BOTH COTTON AND SUGARCANE PRODUCERS ON THEIR EXPERIENCES WITH IRRIGATION AUTOMATION AND MODERNISATION. BURDEKIN IRRIGATORS WHO ATTENDED THE FIELD DAY HAVE FURTHER INVESTIGATED TECHNOLOGY DISCUSSED AT THE FIELD DAY AND ARE IN THE PROCESS OF ADOPTING THIS TECHNOLOGY INTO THEIR FARMING OPERATIONS. (FIELD DAY BOOKLET IN APPENDIX 1).

As a demonstration of the commitment of irrigators to drive the efficiency of irrigated agriculture, the next phase of the system comparison is being scheduled to take place on Keytah our primary ‘optimised irrigation farm’ during 2017-2018. The ‘Smarter Irrigation for Profit’ project in partnership with the producer, is supporting a practical assessment of the automation of irrigation systems to help maintain WUE as well as address labour resourcing. The trial will involve an assessment of remote control or automation of siphon, bankless channel, lateral move and subsurface drip irrigation at a single location. This site is well recognised across the cotton industry as a premium irrigation efficiency site.

Continued investment in grower-led research at this site will further enhance learning for the agricultural industry. Importantly it enables producers to see infrastructure, technology and engineering solutions in a commercial environment, so that they can

make well informed decisions to enhance the efficiency and cost effectiveness of their irrigation systems.

Agricultural producers have traditionally learnt from each other, as the early adopters typically iron out the challenges associated with adoption of new innovative technology and the modernisation of systems. Many farming operations are faced with declining terms of trade, variable climate and environmental pressure, as a result they are reluctant to adopt new technologies unless there is a demonstrated fit into practical on farm situations. Optimised irrigation farms have enabled producers to see firsthand how to integrate new technology and techniques into their operations to enhance water productivity, efficiency and farmer profitability.

The current project has significantly enhanced the cross regional and sectoral collaboration and extension of irrigation research which has enhanced the value of the programme to producers, industry and Government.

Recommendation

1. **The Committee recognise the importance of the National Water Use in Agriculture RD&E Strategy and recommend the continued endorsement of the strategy by the Primary Industries Ministerial Council.**

5.1.2. Achieving Sustainable Groundwater Entitlements Community Development Fund

Under the Achieving Sustainable Groundwater Entitlements (ASGE) Community Development Fund the GVIA managed the 'Investigating and Investing in Horticulture Alternatives for Cotton Growers in the Lower Gwydir Region' project. There were three components to the programme;

1. Identify suitable horticultural crops.
   This involved the development of a report 'Horticultural Alternative in the Lower Gwydir', a document that is used as a foundation document for encouraging further development and water use efficiency in the region.
2. Grower extension campaign.
   This provided for information sessions and the opportunity for irrigators to apply for funding to investigate and prepare for possible developments.
3. Convert approximately 109 Ha of flood irrigation into drip.
   There were nine expressions of interest and ultimately three projects funded resulting in 127.7Ha being planted on three properties. The plantings included pecans, oranges and olives.

CASE STUDY ON ASGE OUTCOMES IN THE GWYDIR VALLEY:

THE PECAN DEVELOPMENT IN THE GWYDIR VALLEY PROVIDES A DETAILED ACCOUNT OF WHAT WAS INVOLVED IN PREPARING AND PLANTING 47.7 HA OF PECANS AND WALNUTS. ANY DECISION TO MOVE TO AN IRRIGATED

HORTICULTURAL CROP IN THE GWYDIR VALLEY WOULD REQUIRE ENORMOUS INVESTMENT IN TIME AND RESOURCES ON BEHALF OF THE PRODUCER. IMPORTANTLY THE RETURNS FROM TREE CROPS ARE DELAYED, TAKING UPWARDS OF THREE TO FIVE YEARS TO PRODUCE ANY CROP AND HENCE ANY RETURN ON INVESTMENT.

The ASGE fund is a demonstration of what can be achieved with well positioned public funding. It has highlighted that there is potential to expand the horticultural industry in the region. It has also highlighted that installing a drip irrigation system for horticulture has the potential to improve the water use efficiency of tree crops, maximising the return per megalitre of water and the socio- economic benefit to the local community through high value permanent cropping.

Recommendation

2. **The Committee recognise that ground water entitlements are an important component of water use in Agriculture and that the committee support continued investment in irrigation infrastructure and on farm irrigation efficiency programmes available to all forms of entitlement.**

5.1.3. Sustaining the Basin; Irrigation Farm Modernisation program

On 4 June 2012, the Australian Government initiated the Sustaining the Basin projects to help bridge or reduce the gap in the water required to meet the sustainable diversion limits (SDL) in the Basin Plan. Irrigated farm modernisation (STB:IFM) is one these projects being implemented between 2012 - 2018. The intention is to improve water use efficiency, water savings, and increase water related productivity in irrigated farming systems[11].

There were a number of producers in the Gwydir Valley who participated in both the the pilot program,[12,13] no producers have participated in the main rounds. The producers who participated in the project received funding through returning water to the government. To offset this loss of water the funds were specifically focused on increasing irrigation water use efficiency. These increases were achieved in a number of ways; reduced transmission and evaporation losses, more efficient infrastructure to move water around farms, technology to allow more efficient application and hence fewer drainage losses.

CASE STUDY ON OUTCOMES FROM THE STB:IFM IN THE GWYDIR VALLEY:

THE ESTENS FAMILY[14] UTILISED THE PROGRAMME TO ASSIST IN MOVING FROM FLOOD IRRIGATED COTTON TO DRIP IRRIGATED CITRUS. THE MOVE WAS INITIATED BY A 45% REDUCTION IN GROUND WATER ENTITLEMENT, WHICH SIGNIFICANTLY

[11] http://www.water.nsw.gov.au/water-management/water-recovery/sustaining-the-basin
[12] http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0006/437325/winters.pdf
[13] http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0003/437322/birch.pdf
[14] http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/437323/estens.pdf

AFFECTED THE VIABILITY OF THEIR FLOOD IRRIGATION DOMINATED COTTON OPERATION. SINCE THE 2012 INVESTMENT, THEY HAVE MADE SIGNIFICANTLY MORE INVESTMENT IN DRIP IRRIGATED CITRUS PRODUCTION AT THEIR OWN EXPENSE TO MAXIMISE THE RETURN PER MEGALITRE OF WATER. THIS HIGHLIGHTS AGAIN THAT SMART INVESTMENT IN WATER USE EFFECIENCY, CAN PROVIDE SIGNIFICANT BENEFITS IN THE LONGER TERM.

However, a significant shortfall of this program is the requirement to hand-over entitlement to the Commonwealth Government to bridge the gap Sustainable Diversion Limits for the Basin Plan. As the Gwydir Valley is considered 'over-recovered' and has already met its SDL, this program has not been available for some-time and is not supported by many in the irrigation sector who live through the impact of water recovery to their community.

The principle concept of encouraging water use efficiency development is supported, without the requirements to hand water over to the funding provider.

Recommendation

3. **The Government continue to fund programmes which support investment in irrigation infrastructure and on-farm irrigation efficiency programs but without the requirement to share savings with funding providers. Irrigators should be allowed to maintain 100% of water savings, to increase agricultural production. Infrastructure investments should be done in partnerships between government and irrigators and or irrigation scheme managers.**

5.2. Value for money of existing expenditure

The Smarter Irrigation for Profit project and the farmer managed optimised irrigation farms have enabled researchers to collect practical on-farm data more suited to early adoption than would otherwise be possible. On-farm testing of sensors, infrastructure prototypes, automation options and system designs is essential for the efficient development of practical solutions.

The optimised irrigation farm projects are enhanced through the support of funding, however, in all cases there is a significant amount of the investment is borne by the producers themselves. For these projects to run effectively the producers invest significantly more time than they would in normal production situations and this is not often feasible for small farming operations. In addition, there is investment by producers in infrastructure and technology not covered by funding.

The contribution of technology providers is also critical, with infrastructure or technology often supplied at cost. These optimised irrigation farms have ensured that producers, researchers and technology providers are working together which is increasing the efficiency and effectiveness of research, development and extension. Uptake of new technology is happening more quickly than it would if these farms where

not included in the model. The collaborative approach has also ensured that the technology is delivering to the needs of the industry and individual producers.

The optimised irrigation research results from the Gwydir Valley projects has been effectively disseminated across the cotton and irrigation industries through print and online media as outlined in the case study provided as well as footnote reference 10.

Recommendation:

4. **The committee recommend the continued support for national programmes such as the Smarter Irrigation for Profit project. Support for these projects will ensure research, development and extension is delivered efficiently and effectively. This will further enhance the adoption of best practice and reinforce the recognition of Australian irrigators as some of the world's most productive and efficient.**

5.3. Possible improvement to programs, their administration and delivery

Funding programs that meet the desired needs of all parties as with the Smarter Irrigation for Profit, are considered highly successful. But not all programs achieve this outcome and are often designed without the consideration of the needs of the farmer or grower, and are designed only to meet the needs of the funding provider.

As outlined earlier, we support the concept of the STB:IFM project at pursuing water use efficiency gains but not the requirement to hand water entitlement over to the funding provider. Any removal of irrigation water from production will have an ongoing impact on the community which support the irrigation. This is vividly demonstrated in the socio-economic analysis prepared in the recent Northern Review for the Basin Plan. It is especially apparent in valleys such as the Gwydir which is over recovered.

Furthermore, the STB:IFM project assumes that overhead irrigators, drip, sprinkler or micro sprinklers will increase water use efficiency. This may or may not be the case as outlined in our systems comparison research outcomes. Irrigation water use efficiency will be determined by the interaction of soil, crop and climate. Increases in irrigation water use efficiency can be made by making changes to flood irrigation systems too.

Another program considered unsuccessful in terms of meeting needs of participants and indeed the desired outcomes, is the Murray Darling Basin Regional Economic Diversification Programme. This programme comprised two streams of funding; Regional Business Investment Fund and Energise Enterprise Fund. This program was designed to cover the whole MDB in NSW. For it to have been successful, it should have focused primarily on the communities impacted by water buy backs and/or water recovery, rather than simply communities in the basin. Communities such as Moree and Collarenebri were directly affected by over recovery and should have been given

priority funding. Unfortunately, this was not the case and much of the resource was spent in area unaffected by water reform.

In addition, the programme had too strong a focus on creation of new jobs and building skills capacity. A focus on maintaining employment and enhancing diversification of water use would have been significantly more beneficial to communities directly impacted by water recovery. This approach would have provided a platform for irrigation communities to enhance the return per megalitre for the benefit of the community. A review of project funded suggest that the monies invested have been poorly targeted.

The GVIA outlined in our submission to the MDBA on the Basin Plan Amendments[15]:

> *"…government assistance to-date has fallen short of genuinely supporting those communities hardest hit by the Basin Plan. For example, the funding providing by the Murray Darling Basin Economic Diversification Fund has been ineffective. While the GVIA does not discredit the value of projects being funded, towns like Armidale, Coonamble or Orange all in NSW21, for example would not be considered significantly impacted by the Basin Plan yet received funding under the program as they are located 'in the Basin'.*
>
> *Not to mention that the value of traditional support packages appears to be diminishing as the regulatory requirements of accepting that support somewhat out-way the financial benefit."*

Recommendations:

5. **The Government review and update Sustaining the Basin; Irrigation Farm Modernisation and the Murray Darling Basin Regional Economic Diversification Programmes to better achieve objectives for all parties.**
6. **The committee recognise the importance of support for economic diversification. The committee recommend funding to support economic diversification focused on maintaining employment in regional communities and enhancing diversification of water use.**

5.4. Other matters

Irrigation is an essential contributor to the economy of our region (for the purposes of this document, this is the Moree Plains Shire Council (MPSC)), NSW and Australia. The value of the local agricultural industry can be summarised as follows;

- Cropping accounts for 54% of the land-use, 10% of this is irrigated and in 2011 produced around 72% of the value of gross domestic product (cotton is around 60%).

[15] https://getinvolved.mdba.gov.au/bp-amendments-submissions submission 193

- Total Agricultural production in the shire in 2011 was nearly 8% of the state's gross domestic product estimated at $911 million.
- Using an economic multiplier for the community from the ABS (2.178) this equals $2 billion to the region.
- Total Irrigated production is estimated at $656 million, which generated an estimated $1.44 billion.[4]

The community and social impacts of over recovery of water from the Gwydir Valley under the Basin Plan have been significant in the region. For both Moree and Collarenebri social and economic indicators declined through 2001 to 2011 including education, economic resources and disadvantage.[2]

In Moree, there was an 8% decrease in water availability which equates to around 5% reduction on area. This had the following impact on employment;

- Modelled change in FTE is around 15% (850 FTE)
- 2.4% (47 FTE) impact on jobs in agricultural sector to 1.5% (27FTE) in non-ag.
- Total impact of Basin Plan a 1.4% (75 FTE) without taking into consideration Collarenebri, a town whose major service centre is Moree.
- Total agriculture and agriculture supply sector felt by 22% (520 FTE) with non-ag private sector also declining by 21% (460 FTE) between 2001 – 2011.

In Collarenebri, there was a 66% decrease in water availability which equates to 83% reduction in area for irrigation. This has had the following impact on employment;

- 21% (54 FTE) change in jobs because of the Basin Plan (28% (47 FTE) reduction in farm related jobs and 21% (7 FTE) other private jobs).
- Relates to half of the total job losses which are agriculture and supply sector have 42% (81 FTE) with non-agriculture private sector also declining by 68% (50 FTE) between 2001-2011.

The process of water recovery under the Basin Plan was implemented poorly with devastating outcomes for regional communities reliant on irrigated agriculture.

The GVIA recommend that over recovered water is returned to production in valleys such as the Gwydir be supported via trade. The return of over recovered water would improve the productive capacity of the irrigated industry, which would have demonstrated benefits for the agricultural and supply sectors, as well as for the non-agricultural sector. It would lead to some reversal in the job losses seen between 2001 and 2011. The funds generated from the sale of this water could be effectively utilised to add value to the economic base of the community to build community resilience and reinvigorate the economy of the region.

Recommendation

7. **That the committee support the MDBA conclusions that some valleys are over recovered as the Government has bought too much water. The trade of excess water should be encouraged to support investment in improved**

irrigation water use efficiency, increased economic activity and to enable investment in measures to enhance river health.

5. Conclusion

The Gwydir Valley Irrigators Association (GVIA) welcomes the opportunity to provide this submission to the House of Representatives Standing Committee on Agriculture and Water Resources into their inquiry into Water Use Efficiency in Australian Agriculture.

The organisation represents the interests of over 250 water entitlement holders who irrigate a range of horticultural and broadacre crops. Our members are actively engaged in developing practical sustainable irrigation operations focused on efficient water use and sustainable productivity.

A strong effective irrigation industry will significantly contribute to the survival of regional communities and smart investment by Governments can undo some of the poor policies of the past.

We look forward to discussion our research and our submission in more detail at the Agriculture and Water Resources committee's public hearing in Narrabri on the 6th of April 2017.

Submission ends…