**Mihir Gupta:**

Good afternoon everyone, thanks for joining us today. I'll just give everyone a few more seconds to join the meeting, so we'll kick off in about 30 seconds or so.

I see we've still got quite a few people still joining, but we might kick things off. There's a lot to get through today. So thanks for joining us, welcome to the Water Market Outlook, the latest in the ABARES perspectives webinar series. My name is Mihir Gupta, I'm a senior economist at ABARES leading the water research team. I'd like to start by acknowledging the traditional custodians of the land we are meeting on. For me, that's the Ngunnawal people. I acknowledge and respect their continuing culture and contribution they make to the life of this region. And I extend that recognition to the traditional custodians of all other lands on which we are gathered today, and to all Aboriginal and Torres Strait Islander people attending this event.

So a couple of quick housekeeping things before we jump into the webinar. Uh, during the session, if you have a question, please feel free to use the chat feature in Microsoft Teams. If you'd like to be anonymous, you can also ask questions via Slido. Just navigate to slido.com in your browser and use the code #wmo to access the Q&A feature. We'll be posting something in chat shortly with those details as well. Also, please note that the session is being recorded and we'll make it available on our website at a later date.

So for those joining this webinar for the first time, the ABARES water market outlook is published twice a year and takes into account all of the latest information that's put out by the states in terms of their allocation outlooks, as well as the BOM climate outlook. This data is then plugged into an in-house model, it's called the ABARES water trade model, where we estimate the likely water market and irrigation activity in the southern Murray Darling Basin for the year ahead. So the last outlook, the latest one was published on the 28th of July, that's available on the ABARES website now, we might chuck a link to that in the chat as well for anyone that wants to take a look. But to discuss the findings, joining me today are panellists Tim Westwood and Matt Miller. So Tim is a water economist at ABARES, with an extensive research background in natural resource topics, and Matt Miller is a senior scientist and has provided analysis and assessments of climate risks for Australian and global agriculture for many years now.

We'll kick things off with a short, pre-recorded video summarizing the ABARES outlook, which is going to be presented by Tim.

**Tim Westwood:**

Hello and thank you for joining me today. Today I'll be going through our latest results from the water market outlook July 2022 edition. In this report, we forecast prices and irrigation activity for the coming year 2022-23. To do that, we take the latest available information from the BOM and from the state water agencies and their allocation outlooks. Now, before I get into the forecast, I will just briefly touch on what's been happening in the last previous year, 21-22, and setting the scene for what we can expect next year.

So, as I'm sure you're all aware last year was an incredibly wet year we had a La Nina event happening and that has allowed storages across the Southern Murray Darling Basin to increase from the quite low levels that we saw in 2019-20 in the last drought, up to around 90%- 90% plus at the end of 21-22. Now that increase in storages can be observed also in what happened to prices. So, in 2019-20 we had prices in excess of $600 per ML and as the storage have increased throughout the last couple of years, the prices for allocations in some regions has dropped to remarkably low levels, $1 a megalitre in some regions. So, a really big decrease in prices in response to this above average rainfall. Showing a similar pattern is the carry-over reserves that we've seen irrigators holding onto. So, in 2019-20 we saw them drawn down to quite low levels as irrigators were dealing with low allocations, they were using carry over to help boost their supply and to keep the crops going. Over the last two years, though, we haven't seen them use carryover really at all. Instead, they've gone into an accumulation phase. And what that means is that as we enter 22-23, we have the highest carryover balance in a decade. So, they really rebuilt it, they’re in really good position for next year.

Now, looking ahead for the allocation outlook and the forecasts that the state water agencies have provided, they are exceptional. We're forecasting all major securities in all major regions to reach 100%. Even more than that the opening allocations have started incredibly strongly. So, across the Southern Murray Darling Basin, we've seen opening allocations beginning the year at more than double the historical average and in some cases, you know, two or three times higher than the historical average. So, there's just a lot of water at the moment in the Southern Murray Darling Basin and also a lot of certainty so that that knowledge that allocation outlook is incredibly strong, but also that really high volume of carryover the irrigators have means there's going to be a lot of certainty in making planting decisions and also the water management strategies. Now we can see this reflected in our price forecast. We're forecasting prices to decrease next year in the wet scenario, which is our preferred scenario. But further to that even, you know, in an extreme dry scenario which basically assumes that it doesn't rain again during the forecast year we still see prices at quite low levels, and there's a quite a small margin between the extreme dry and the wet scenario, and that is reflecting that water certainty that I was talking about before.

We also have our production forecast for the coming year, so here we have the gross value of agricultural production, and we're forecasting it to increase to 6.6 billion next year. Now, that's not a big increase from last year. But there's a few factors going on here. So, some industries are increasing, and some are decreasing. So, an example for each is for almonds we're seeing production increasing and the value of production, increasing as trees continue to mature. Uh, and then that results in higher yields and thus more production and thus more value of production. Um, but other commodities such as cotton we are actually forecasting a decrease. Now, in the case of cotton that is being primarily driven by a very high cotton commodity price, uh, last year, 21-22 and has decreased quite substantially, going to 22-23. Uh, that's driving both a decrease in production, but also a decrease in the value of production. So, it's kind of balancing out some of the increases we've seen in the

other, the other commodities.

So that brings me to an end for this presentation. The full report is up online at the moment. We have a dashboard as well, so you can explore the regional results at your leisure and yeah, that brings me to the end of this. So, thank you so much for your time

**Mihir Gupta:**

That was Tim Westwood, water economist at ABARES presenting the outlook for water markets in 22-23. So we'll jump into a bit of a live panel session shortly, but I just wanted to remind folks that you can ask questions at any time via the chat feature in Microsoft Teams or anonymously via Slido.

So we've got around 20 minutes with our panellists and our might kick off with a question for you, Matt. We hear terms like negative IOD and La Niña events and things like that thrown around quite a lot, pretty sure I heard some references during Tim’s presentation just then as well, could you explain what they actually mean and how they typically affect Australia and the agriculture sector in Australia?

**Matt Miller:**

Yeah, happy to Mihir. So with Australia's climate, we typically have the influence from the Indian Ocean and the Pacific Ocean. So depending on what phase those major drivers are in, so one we call the Indian Ocean Dipole, obviously in Indian Ocean, and then we've got the El Niño southern oscillation in the Pacific Ocean, depending on what phase those are in it obviously depends if we get wet or dry conditions in Australia. When there's an absence of a strong signal from either the Indian Ocean or climate signal from the Indian or Pacific Ocean, we tend to have what they called neutral conditions, which we tend to get sort of average rainfall and temperature conditions in Australia. So at the moment we've just come off an enhanced phase, or La Niña in the Pacific Ocean, where it means that ocean temperatures in the Central Pacific are cooler but means ocean temperatures around Australia, especially off our North East coast, are warmer than normal. Which actually provides a pool of atmospheric moisture that then can be sucked down by weather characteristics like cold fronts or troughs that actually deliver rainfall and that's what's pretty much been delivering a lot of the rainfall to the East Coast of Australia, so tying in with East Coast lows or low-pressure trough systems have actually been driving those really wet conditions we've have during especially parts of our June and July. What we have over in the Indian Ocean at the moment we're going into a negative phase of the Indian Ocean Dipole which actually means again there's warm water off the northwest of Australia and that provides a moisture pool for things like the jet stream or other, weather phenomenon to actually draw that moisture down across the Eastern Australia. So yeah. So we're pretty much so we've come off enhanced phase in the pacific and straight into one from the Indian Ocean to deliver a lot of rainfall to and there are usually in northern and eastern Australian influence for increased rainfall for either of those events.

But we also have a global influence of those events as well. So when we've got La Niña in place, we tend to have drier conditions in parts of South America and North America as well, which has been playing out with droughts in southern parts of Brazil and in Argentina as well as we've had droughts across northern and central parts of America as well which is impacted especially winter wheat production but also corn and soybean production out of Brazil and Argentina.

**Mihir Gupta:**

Yeah. Thanks, Matt. Tim, you mentioned that some of these factors have been taken into account, in terms of, you know, ABARES sort of picking that wet scenario. Did you want to add anything in terms of what that's going to mean for water markets and irrigation activity and so on?

**Tim Westwood:**

Yeah, sure. Thanks, Mihir. So at the risk of repeating kind of what I said in my presentation, all these enhanced conditions as Matt was calling them, these wet conditions are all leading to a very high supply of water in the water market at the moment. Now that means we have a lot of water available and that is then being reflected in lower prices, so we don't see as much kind of competition for water happening, we're not expecting, I should say, we're not forecasting that. At the time of writing we wrote this at the 15th of July, we had the allocation outlook from the states, so that's the kind of primary driver behind our modelling they release allocation forecasts for the coming year and we feed those into our model and we were able to generate the results that we've got here today. As I mentioned, those are all exceptional we are expecting one hundred percent basically across the board, which just means there's a lot of certainty in how much water we're going to get next year.

Additional thing just to mention is that when we wrote it, the negative IOD had not been officially declared, I think it was officially declared two days ago, Matt you might correct me if I’m wrong, so that that just kind of means is kind of a continuation of you know, we didn't write this and then all of a sudden I got bone dry, it's continued being wet and it's kind of leading us into this. One final point, I just like to make about, you know, kind of what this may mean for irrigators is the amount of certainty available at the start of the year is pretty much unheard of. So we started the year with really high allocations. We started the year with very high carryover reserves and then the outlook, the forecast for what allocations will get to the end of the year are very strong, and what this means is that if you're an irrigator, you have quite a lot of certainty right now about how much water you will get and how much you can use. And that's going to really help them make their planting decisions, make planting decisions now and know you're going to have the water at the end of the year to finish that crop off, but it also might help them, you know, make that forward planning for carryover decisions as well. So just a lot of certainty at the moment.

**Mihir Gupta:**

Yeah, that's an excellent point, Tim. We're all sort of risk adverse individuals I suppose, so definitely helps to have that certainty for irrigators. Matt, you'd started to mention a little bit of sort of what's happening elsewhere in the world with regards to climate conditions. My understanding of climate science is extremely limited compared to yours, but my general understanding is that if it's wet in Australia, it's dry somewhere else. Is that kind of right?

**Matt Miller:**

I suppose yes and no. Yes, In the climate sphere they call it teleconnections. So pretty much yeah so it's sort of like this whole idea if a butterfly flaps its wings in the Brazil you get these effects somewhere else so it's similar, so obviously if we've got warm water around Australia it means that there's the cool pool of water off, especially off, the Americas, off the South American coast and the southern US and that can actually influence things like the northerly jet stream that heads across the US and over the past the month that jet stream has been typically much further north than it typically would be, which is actually brought quite dry and very warm conditions to the most of the US, they've actually gone through pretty much heat wave conditions through much of July and that's continuing on into August. That's actually been obviously a very impactful because it's actually leading to a very high water demand both for dry land and for irrigated crops, so we've got things like in Texas where they're probably actually they're really struggling with things like they're cotton, crop, their estimates there is that the cotton crop would be probably about 1/4 of normal in some of the main growing regions and pretty much there's no dryland cotton and they're irrigated cotton is pretty much in survival mode just on that huge water water demand from high temperatures and lack of rainfall. So that's sort of a teleconnection there. We also tend to get obviously in a place like Indonesia or Southeast Asia that they continue to remain relatively wet like Australia, similar influences that obviously they can influence from the Indian Ocean as well. But we actually are seeing some interesting very, very warm conditions across Europe and the UK and obviously and dry conditions go along with that, which is actually impacting, it has, like in, France has had a big impact on their wheat crop and it's potential to affect corn crops in France and Spain as well. So yeah, we tend to yeah, we tend to be cooler and wetter but other parts are definitely can tend to be hotter and drier.

**Mihir Gupta:**

And I can see there's a question that's come through via Slido. This one might be for both of you to potentially weigh in on. So just wondering if there is a way to translate impacts of global rainfall on the domestic market and the availability and costing of goods. So I think the questions basically getting to what are the impacts of sort of global climate conditions on, I suppose some of the inputs and outputs in the agriculture sector domestically? Any takers for that one?

**Matt Miller:**

Yeah. I'm yeah. I'm happy too. Yeah. I am more of a climate scientist, but I do work in the commodity forecasting area of the Bureau. So what we've seen is that, yeah, obviously that those decreases in global supplies of some of the core commodities, things like wheat, corn and soybeans is actually weighing on prices, which is obviously net benefit for Australian producers seeing we are majority exporter, especially of things like wheat. And when you have a soybean, and we've also had canola reduction in production in Canada last year as well the drought, so we're actually seeing that a direct benefit in terms of domestic prices here in Australia and obviously it's been, I think it was a record, a profitable year for Australian production last year, last financial year. So and obviously we're seeing that flowing through to this financial year. So commodity markets still remain quite tight. We've actually in our June commodity outlook, we saw some sort of stabilisation, but I think when you look at some of those major climate factors that have been going on around the world, there has been a movement in commodity markets again and futures prices for some of those key commodities. So I think we will see some changes coming through in ABARES September outlook numbers.

**Mihir Gupta:**

Thanks Matt. And um, we might stick with you for this one, but Tim keen to get your thoughts as well. There's a question come through from Robert O'Connor from DJPR around sort of the effects of climate change on things like the ENSO and IOD, but I might extend that question a little bit further as well and just sort of pose it to both of you just around sort of I suppose the risk of more frequent natural disasters or extreme climate events in the future, and what that might mean for the ag sector. So, you know, Matt, perhaps you could weigh in on that first part and Tim would be keen to get your thoughts on structural change impacts and things like that resulting from those extreme weather events.

**Matt Miller:**

With our Indian Ocean Dipole there's pretty much it is a relatively, well I suppose the science on that one is fairly new, and there's actually not a lot of scientific studies that I'm aware of that actually look at what's going on in terms of any climate change influence on the Indian Ocean Dipole. But what it does mean with climate change and then the number of El Niño or La Niña events that we have, it seems to not be changing, but with the increased temperatures we actually we have an enhancement of those drivers. So the warmer temperatures, the warmer the ocean temperatures in a La Niña phase, we tend to get more intense rainfall events, so higher rainfall and obviously, flooding conditions that go with it. But conversely in when we have the El Niño, the negative phase of ENSO, we tend to have really, really dry and hot conditions. So yeah, because of the extra energy in the system with we tend to exacerbate those effects and obviously that flows into when we do have these enhanced phases either wet or dry, it tends to push them to the extreme end rather than to have our more moderate sort of outcomes.

The other interesting thing is that there is a third driver especially affects Southern Australia, which is the Southern Annular Mode (SAM). So there is a long bit of study that actually indicates that there has been a change in the Southern Annular Mode as climate has changed and we tend to be getting more positive SAM across southern Australia which is a positive phase that means that the cold fronts that typically head across southern Australia especially to bring a break of the seasoning autumn and a lot of winter rainfalls, it actually pushes them further South and actually we have less influence and we've actually, if you look back at sort of the last 30 years compared to the 30 years beforehand, the typical autumn break was sort of becoming very unreliable. That's sort of signature seemed to move a little bit with obviously a move into the La Niña phase, we tend to be going back more to sort of a neutral SAM condition. And we actually been getting a lot more of this southerly flow of rainfall, but yeah, there are definitely some climate change signals there.

**Mihir Gupta:**

Thanks, Matt. And Tim, did you want to weigh in on sort of, I guess, the impacts of, you know, more frequent extreme weather events on the ag sector?

**Tim Westwood:**

Yeah, sure. So I mean, you know, it can go one of two ways and can either be too wet or too dry. We've kind of been seeing a little bit on the wet side last year in 21-22, there's been a kind of a bunch of news articles coming out from various industry bodies saying that you know these wet conditions are making it harder to harvest their crops. You know they can't get onto the farm. There's pictures of those big heavy machinery sunk in the mud and stuck. We've also heard, you know, for example, the Almond board of Australia, they came out and said there was a 4% decrease in their production forecast. And they were citing wet weather, they were saying they could get on to the farm and it was also decreasing their crop potential. One other thing to just mention on that is it can also maybe not decrease the volume of production, but it can decrease the quality of production. So there's been a few stories going around in the clippings about cotton crop, they haven't been able to get into harvest it, and while it doesn't necessarily go to waste, the quality is going down, so there will be less returns from that. On the other side of the coin, of course, is then you know, drought, some more extreme dry weather conditions. That's the biggest impact on water markets, you know, dry conditions, we'll see supply go down for water and then we'll see prices respond as a result. Yeah, I mean, you know, it remains to be seen, I guess, how severe they are, but you know the longer the stretch goes kind of the higher prices are going to get. You know, we're not going to be able to rely on carryover as much because people will be drawing it down. So just being maybe a little bit less resilience in the system as it gets hotter and hotter.

**Mihir Gupta:**

So speaking of carryover, there's a question here in chat for you, Tim, just around sort of I suppose what you think is going to happen with carryover into the year ahead, given that this is a wet year and water use, is likely to be low given that it's sort of raining and you know the rainfall might account for most of the people's needs.

**Tim Westwood:**

Yeah, yeah, excellent question. So I mean, I think in my mind it's probably going to look similar to what happened in 21-22. Kind of similar conditions, you know, very high allocations and high rainfall. And we saw carry over at the end at a decade high. Really, really high. This year is kind of even shaping up to be even wetter. So probably see carryover reserves even higher again. I guess part of the question here then goes to what people's expectations are kind of past our forecast year, so past 22-23 if people are expecting a return to drier conditions, then you'll see those carryover reserves kind of being built up maybe a little bit more as a kind of prepare themselves. But that kind of remains to be seen and it's kind of based on market sentiment.

**Mihir Gupta:**

Thanks, Tim, and I might jump to a question that's getting a few thumbs up in chat from Phillip Snowden. Have you done any forecasting on the availability of water in a dry sequence compared to the requirements of permanent plantings in the Murray system? What impact will further water recovery have on that? So I think this is the question that's kind of getting to all of the horticultural development we've seen in the last in the last few years with the almond sector and that sort of thing. And I suppose just sort of getting to what are the risks of you know, water shortfalls in that space, I suppose.

**Tim Westwood:**

Yeah. Yeah. It's a great question. So we definitely have done some work on this and dry sequences and what the expansion of permanent plantings mean.

Sorry I've kind of lost my train of thought. So what impact will this have? And how will we address it? Water markets, you know, we get a price for water and that allows irrigators and operators within the basin to kind of draw upon the market and buy water as they need it and when they need it. Now with, you know, permanent plantings, they have a high willingness to pay for that water. So that means that, you know they will typically pay more for their water than potentially say a rice farmer. And that is just kind of goes to the nature of the crops, so perennial crops last multiple years, you need multiple years to get your return on your crop and if it dies in one year, we'll that's bad. Umm yeah, sorry, I've kind of lost my train of thought again.

**Mihir Gupta:**

I think there's probably still, I suppose, a day-to-day risk though isn’t there Tim. So with permanent plantings given that you know they require a fairly steady supply of water to keep those trees alive, and so on. Is there a bit of a sort of a day-to-day delivery shortfall risk given the sort of the level of plantings we've seen over the last few years?

**Tim Westwood:**

Yeah. Yeah, sorry, that's a good point. So this was something that we kind of saw coming up a little bit a few years ago back in around 2019-20 when it was quite dry. The MDBA was coming out and saying “ohh hey, there might actually be some delivery risk shortfalls” we hadn't really seen that before, at least not in my experience. You know, they were kind of flagging that could be an issue where we can't get the water to you on the day that you require it because there's maybe not enough water in the system. I wouldn't expect that to obviously be a problem next year, heaps of water, but it is something of a concern that the MDBA will be keeping an eye on. And yeah, in my mind, it really comes down to the river operations side of things and they have to make, they have to make those calls days in advance and as it gets drier it becomes harder to kind of make those to align those two things properly. Uh, yeah, I think that that's for me.

**Mihir Gupta:**

And I imagine you know things like the IVT limits will continue to play a bit of a role there as well with some of the recent changes to the Goulburn to Murray IVT, that seems like it's a bit of a watch and see space to see what effect that might have on, the typical demand from the hort sector in the Murray and whether they're still going to be able to sort of get water from the Goulburn, and there's of course the Barmah choke, which sort of regulates how much water can move from upstream to downstream as well.

Look, there's a lot of interesting sort of stuff happening in that space in the moment in chat as well I can see, but we're nearly out of time. Could I just get a couple of quick comments from both of you just on some of the, I suppose, the longer term trends that you're observing both in the climate and water market space, so I might go to you first, Matt, in terms of any longer term trends that you know you think are worth keeping an eye on in the climate space for the ag sector?

**Matt Miller:**

Yeah. So I suppose obviously now with the Bureau of Meteorology pretty much saying that the negative IOD is pretty much established and we have the potential for La Niña again to re-emerge. So yeah, it's actually pretty much well, I wouldn't say unprecedented, but it's very, it's very rare conditions. So I think we've only seen these three wet years happen, only twice in the last sort of 50 years or so. So yeah, we're actually looking at, we're actually in quite a wet phase for the Australian climate and I think that's obviously pushing through to actually great prospects for this year and probably into the following year because obviously that build up a soil moisture then can support production going forward. I think moving ahead, it's more likely that we're actually, we’ll, probably hit dry conditions over the next 5, then probably more wet. Obviously the way the climate tensor cycle in Australia especially, we tend to go from these La Niña phases, we will return to neutral and then it's more likely to head into drier conditions, at least one out of the next five years. So it's probably something to be mindful of we will return to drier times and that's pretty much consistent with what we forecast for the last cycle. But moving ahead, obviously, in an enhanced or in a climate change world, we will be experiencing warmer than normal temperatures, that's a given we've obviously our temperatures are warmer and what that means for us, I suppose, the efficiency or, the actual effectiveness of rainfall that falls, actually tends to reduce, so for any given amount of rainfall, obviously with higher temperature we tend to have a decrease in production. So it's sort of been the model and that's pretty much what a lot of our ABARES modelling is suggesting that even though productivity has tended to keep us pushing forward it's really when it's adjusted for climate, climate will continue to have a large impact on our production moving ahead.

**Mihir Gupta:**

Thanks very much, Matt and Tim, did you want to add any sort of longer-term trends that you're keeping an eye on, I suppose in the water markets and you, irrigation sector space?

**Tim Westwood:**

Yeah. Yeah. Thanks, Mihir. I mean, yeah, obviously Matt touched on it, but you know conditions will return to dry conditions is not going to stay this wet forever. That's obviously going to have impacts on markets and we’ll probably see a, you know, return to the kind of higher prices at some point in the future going forward.

Additional thing to just keep an eye on, we kind of touched a little bit earlier but intervalley trade limits. So we've seen for example the Goulburn to Murray one that's kind of come in properly into effect this year, we had the interim measures before, but we haven't really seen how that's operated under the drier conditions, so it will be interesting to keep an eye on that and see what happens there. Similarly you know NSW has announced that Murrumbidgee IVT trade limit review. I haven't heard much about that yet, but you know be interesting to see what comes out of that when they when they release it. And then again with the Barmah choke I mean that's always been a topical issue. Major hydrological constraint in the basin. You know the MDBA and the basin states are looking at ways that it can maybe, you know, maintain or increase the throughput through that. But again just something to keep an eye on any changes, there will obviously have impacts on the market.

And just finally, the basin plan is ending in 2024, is still 450 gigalitres of water to recover. I don't really know much about that other than what I've been reading in the press clippings, but however that kind of goes that will definitely have an impact on markets as well. So definitely something to keep an eye on there. Thanks.

**Mihir Gupta:**

Thanks very much, Tim and Matt and thanks everyone for joining us today. I apologize we weren't able to get to all of the questions. We'll see what we can do about potentially sending out some additional information to respond to some of those questions. But please do also feel free to e-mail us if you feel your question wasn't sort of addressed. We do have a sort of just a brief poll on Slido just to get a sense of whether these sessions are proving useful for you, would definitely appreciate any feedback and suggestions you might have, so please do complete the poll if you can before you go. That's it from us. Thanks very much and we'll see you next time.