Rural decline not driven by water recovery

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Credit: Kym Parry

New research from the University of Adelaide has shown that climate and economic factors are the main drivers of farmers leaving their properties in the Murray-Darling Basin, not reduced water for irrigation as commonly claimed.

Led by Professor Sarah Wheeler, Professor of Water Economics of the University's Centre for Global Food and Resources and the Environment Institute, and published in the international journal *Climatic Change*, the researchers have conducted one of the most comprehensive analyses of farm exit across the world to date. The research was funded by the Australian Research Council.

"Farm numbers all over the world have been decreasing over time and in many countries, including Australia, this is a serious concern for rural communities, exacerbated by the current drought crisis," says Professor Wheeler.

"In particular the Murray-Darling Basin has faced considerable change in the form of increased temperatures and drought severity, reduced irrigation water diversions, declining real agricultural commodity prices and declining rural community services.

"But, in contrast to the current popular view that decreased access to water is the main reason for the decline of farms in the Basin, our study showed that for the period of 1991-2011, the more important drivers of farmer exit were climate—increased drought risk and higher temperatures—and economic factors—commodity prices, unemployment and urbanization."

The study predicts that another half a degree increase in temperature by 2041 would contribute to a further more than 50 percent decline in farmers in the Murray-Darling Basin.

Professor Wheeler and research fellows Dr. Ying Xu and Associate Professor Alec Zuo sourced data from Australian Bureau of Statistics population and agricultural censuses from 1991 to 2011 and matched it with datasets including a variety of climate risk measures, rainfall, temperature, water diversions, location, commodity prices,

unemployment and urbanization factors to model the changes in farmer numbers in local areas over time.

"Over the past 10 years, the Murray-Darling Basin Plan and reduced water extraction for irrigation because of the water buy-back scheme have been blamed as the main reason for rural community decline," says Professor Wheeler. "But we found no significant association between decreasing farmer numbers and measured water extraction in the Basin.

"One potential reason for this is that irrigation farmers make up only about 25 percent of all the farmers in the Basin, and it has been shown that when many farmers sell their water entitlements, they either change to dryland farming or maintain the same level of production because they had surplus water or adapt in numerous other ways.

"What we must do to help our rural communities is take note of the proper evidence and develop policy around drought, climate change, rural economic development and water use that leads to comprehensive strategies for real solutions.

"The belief that we can solve the Basin's problems by simply building dams, taking water back from the environment for irrigators, and stop it being 'wasted' by flowing out to sea is a fallacy.

"New policy must consider the real long-term drivers of farm exit and take a multi-faceted, investment approach. We need to recognise our farmers are facing a drier, hotter future, and plan accordingly."

More information: Sarah Ann Wheeler et al. Modelling the climate, water and socio-economic drivers of farmer exit in the Murray-Darling Basin, *Climatic Change* (2019). DOI: 10.1007/s10584-019-02601-8