



## **Simulating farmer behaviour under water markets**

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Increasing water scarcity may lead water managers to consider alternative approaches to water allocation including water markets. One concern with markets is how will specific sectors interact with a potential water market, when will they gain or lose water and will they benefit economically – why, when and how? The behaviours of different individual abstractors or institutional actors under water markets is of interest to regulators who seek to design effective market policies which satisfy multiple stakeholder groups. In this study we consider two dozen agricultural water users in eastern England (Nar basin). Using partially synthetic but regionally representative cropping and irrigation data we simulate the buying and selling behaviour of farmers on a weekly basis over multiple years. The impact of on-farm water storage is assessed for farmers who own a reservoir. A river-basin-scale hydro-economic multi-agent model is used that represents individual abstractors and can simulate a spot market under various licensing regimes. Weekly varying economic demand curves for water are calibrated based on historical climate and water use data. The model represents the trade-off between current use value and expected gains from trade to reach weekly decisions. Early results are discussed and model limitations and possible extensions are presented.