

Greenhouse gas emissions from farm dams in Australia's irrigation regions may have been massively over-estimated using existing international models, requiring a re-evaluation of the agriculture sector's carbon footprint.

New research into the emissions of irrigation dams in the NSW Riverina district found the Intergovernmental Panel on Climate Change guidance over-estimated their nitrous oxide and methane emissions by four and five times respectively.

The preliminary results show the carbon footprint of irrigation dams, which make up a large proportion of water storages in Australia, is smaller than expected, possibly requiring revisions of national emissions accounting.

A quarter of the dams surveyed were found to be net greenhouse gas sinks, while half were carbon dioxide sinks and more than 70 per cent were nitrous oxide sinks.

The research raises questions about how Australia's emissions inventories are calculated and whether models being used are a true reflection of an industry's carbon footprint.

Lead researcher Jackie Webb, a freshwater and agricultural scientist from Deakin University's Centre for Regional and Rural Futures, said the findings could lead to a complete revision of the global emissions budget for human-made water bodies.

"N₂O (nitrous oxide) emission factors probably need to be revised down for these systems, because our understanding has been challenged," she said. "No one's wrong, it's to do with the lack of data and there had been no other studies of farm dams in irrigation regions. The (IPCC) do great work but they rely on the data that exists already ... but it was quite off in terms of estimating emissions from these semi-arid irrigation dams."