Australia's National Science Agency

ONSHORE GAS RESEARCH IN NEW SOUTH WALES

GISERA | Gas Industry Social and Environmental Research Alliance

Investigating the environmental, social and economic impacts of onshore gas development in regional New South Wales

CSIRO is conducting a multi-year research program in the NSW to better understand the environmental, social and economic impacts of onshore gas development in regional NSW.

CSIRO's Gas Industry Social and Environmental Research Alliance (GISERA), supported by the State and Australian Governments, is conducting research to deliver independent information for communities, government and industry.

Work was initially focused around the Macarthur and Narrabri regions of NSW. To date, GISERA has undertaken a total of 17 projects in NSW, of which 15 are now complete.

To help identify New South Wales research priorities, GISERA's NSW Research Advisory Committee (NSW RAC) reviews and approves research proposals on a range of science questions to which the community, government and local industry seek answers.

NSW RAC membership comprises 67 per cent community and 33 per cent government stakeholders.

What is CSIRO's GISERA?

GISERA is a national collaboration between CSIRO, State and Territory Governments, and industry. CSIRO established GISERA in 2011 to undertake publicly-reported independent research into onshore gas regions, to better inform communities, industry, governments and policy makers. GISERA aims to ensure research conducted by CSIRO is informed by, and of benefit to, the broader community and industry.

Is it independent?

CSIRO has built its reputation on providing impartial, integrated research to industry, regulators and the wider community. GISERA's governance model is central to ensuring independence and transparency in the research undertaken by CSIRO.

How much funding has been committed to this region?

Total funding to date is over $7.6 million, with contributions from the Australian Government ($3.9 million), NSW Government ($1.5 million), gas industry ($530,000) and CSIRO ($1.7 million).

Will this research be available to the NSW public?

All GISERA research is publicly available at gisera.csiro.au along with explanatory fact sheets and videos. GISERA shares its research through local, regional and national workshops, seminars, conferences and technical briefings.

CSIRO | Australian Government Department of Industry, Science and Resources | NSW Government | Supported by Government of South Australia | Queensland Government | Northern Territory Government

origin | Australia Pacific LNG | QGC | Santos | tamboran Resources | Empire Energy

Research projects in New South Wales

RESEARCH	PROJECT	OUTCOMES
Ground and surface waters	Impacts of CSG depressurisation on Great Artesian Basin flux	**COMPLETE** Improved understanding of the GAB groundwater flow in the Pilliga region through integration of existing information from models, hydrochemical data and environmental tracers.
	Spatial design of groundwater monitoring network in the Narrabri Gas Project area	**COMPLETE** Analysis and design of groundwater bore networks for optimal groundwater monitoring and early detection of changes.
	Improving groundwater models to better represent coal seam gas extraction impacts in the Namoi region	**COMPLETE** Improved prediction of groundwater impacts by ensuring accurate representation of the effects of CSG production in the groundwater models being developed for the Namoi region.
	Groundwater contamination risk assessment	**COMPLETE** Assessed the likelihood of groundwater contamination from hydraulic fracturing and wellbore damage.
	Assessment of faults as potential connectivity pathways	**COMPLETE** Improved understanding of sub-surface structures and potential fault zones that may act as pathways between target coal seams and shallow aquifers or surface water systems, and by helping to further improve the accuracy of future groundwater models in the Narrabri region.
	Microbial communities and their ability to degrade prospective chemicals used in coal seam gas activities	**COMPLETE** Improved understanding of regional microbial diversity and their capacity to biodegrade chemicals likely to be used in CSG activities.
	Geochemical modelling and geophysical surveys to refine understanding of connectivity between coal seams and aquifers	**COMPLETE** Improved understanding of the connectivity between coal seams and overlying aquifers in the Narrabri region through high-resolution 3D realisations of the subsurface that represent continuous geological structures. Provided additional information on the potential for connectivity pathways between CSG target formations and adjacent groundwater systems.
	Groundwater modelling and predictive analysis to inform CSG impact assessment, monitoring and management	**UNDERWAY** Improve modelling framework to more accurately estimate aquifer water balance under baseline development and future conditions including cumulative impacts and climate change.
	Review of beneficial reuse or end-use options for brine from the Narrabri Gas Project region	**COMPLETE** Collated existing data on brine and salt management in the region; reviewed existing and emerging technologies and solutions; analysed the costs and benefits of brine reuse and end-use options.
Social and economic	Analysing economic and demographic trajectories in NSW regions experiencing CSG development and operations	**COMPLETE** Identified current levels and trajectories of economic, social and demographic variables in CSG regions within NSW and analyse whether or not the CSG industry could change the trajectory of these variables.
	Social baseline assessment of the Narrabri region of NSW in relation to CSG development	**COMPLETE** Understand and measure attitudes, perceptions and expectations that exist within the community with respect to CSG development, and current levels of community wellbeing and community resilience.
	Decommissioning pathways for CSG projects	**COMPLETE** Reviewed regulatory frameworks in relation to principles derived from international literature and consider social concerns with regard to decommissioning of wells and well pad infrastructure.
	Assessing and projecting on-shore gas effects on regional economic activity	**COMPLETE** Analysed the influence of the NSW on-shore gas industry on regional economic and social indicators, and used economic models to generate descriptions of potential future effects for NSW.
	Monitoring community wellbeing and attitudes to CSG in Narrabri (pre-construction phase)	**UNDERWAY** Monitor any changes in local community wellbeing and attitudes to CSG during the pre-construction phase of the Santos Narrabri Gas Project in NSW.
Greenhouse gases and air quality	Regional Methane Emissions in NSW CSG Basins	**COMPLETE** Identified and quantified methane emission sources such as CSG infrastructure, feedlots, coal mining, legacy bore holes in the Pilliga region.
Health	Potential human health effects of coal seam gas (study framework)	**COMPLETE** Reviewed current information to design a study on the health effects of CSG activities based on community stakeholder, governmental, expert consultation group, and industry input.
Biodiversity	Remote sensing and threatened species surveys to better understand risks of forest fragmentation from the Narrabri Gas Project	**COMPLETE** Determined how fragmentation resulting from Narrabri Gas Project land clearing activities will add to the existing impacts from prior land use fragmentation on biodiversity in the region.

Further information | 1300 363 400 | gisera@csiro.au | gisera.csiro.au

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