Community wellbeing and responding to change in the context of Coal Seam Gas development (2nd survey) — GISERA impact case study

Box 1 **Case Study summary**

Key findings

- Research undertaken for this case study suggests that GISERA has provided robust research and empirical evidence about the impact of CSG on local communities.
- This research has improved two state governments and a QLD industry operators' understanding of community wellbeing and resilience to change.
- An improved understanding has shaped the way governments' and an industry operator approach community consultation and engagement about CSG. It has also provided a selection of government and industry stakeholders with the information required to form a balanced view about CSG-related community issues.
- In the absence of GISERA, empirical, relevant, and trusted community level information about CSG would be unavailable to government and industry.

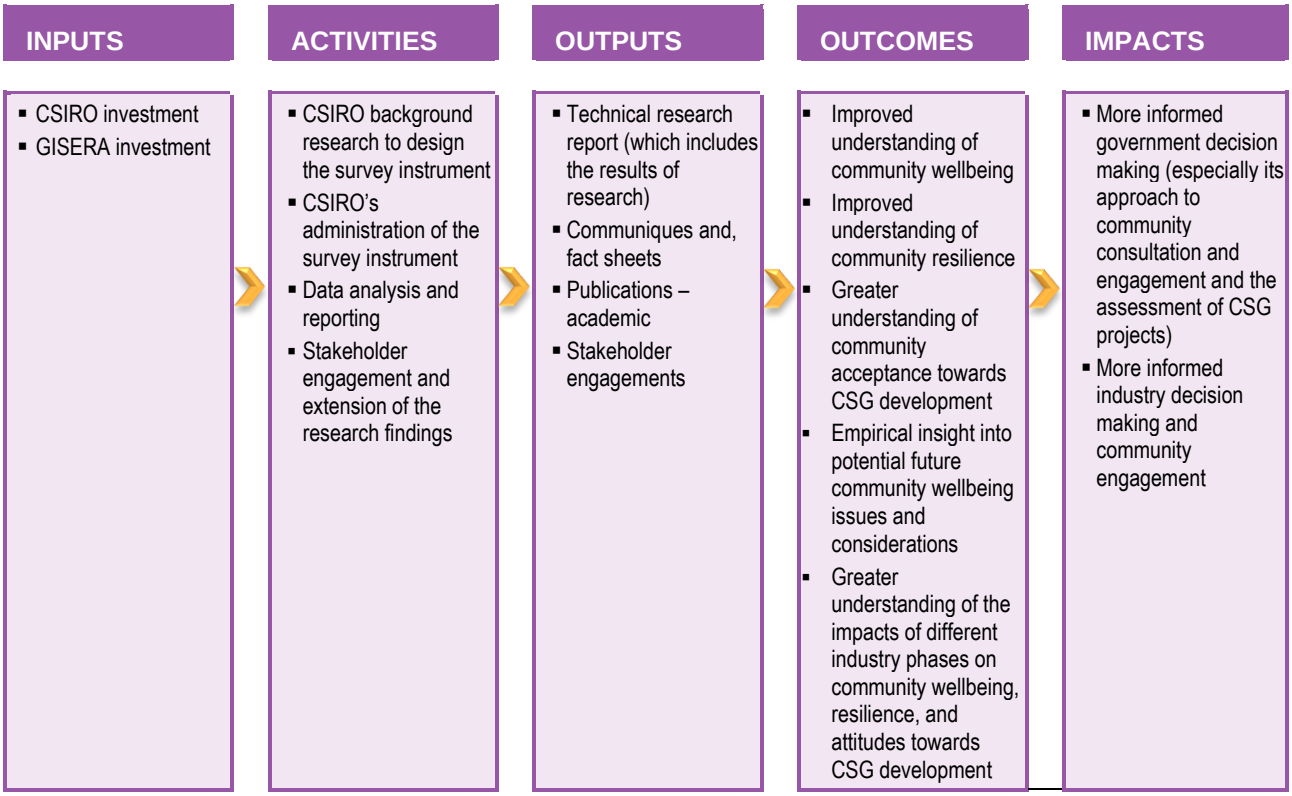
Innovation impact

Through this research CSIRO has established a set of robust social indicators for monitoring community wellbeing and resilience in context of CSG development. This research has informed a highly predictive model of social licence to operate (SLO), which has been tested in NSW in relation to the Narrabri Gas project. The SLO model has applicability to other research domains and has also been tested in the waste and resource recovery sector in Victoria in relation to communities living near landfills. The findings from the Victorian research contributed to Sustainability Victoria successfully receiving funding for programs that address the factors driving social acceptance in the industry and waste related education.

Source: ACIL Allen Consulting

This case study uses the evaluation framework outlined in the CSIRO Impact Evaluation Guide. The results of applying that framework to the Community wellbeing and responding to change (2nd survey) case study are summarised in Figure 1.

Figure 1 CSIRO Case Study (Community Wellbeing and Responding to Change 2) — Impact Framework Diagram



Source: ACIL Allen

1.1 Background

1.1.1 Purpose and audience for case study

This case study describes the social and stakeholder benefits arising from GISERA's support of a research project titled: 'Community functioning and wellbeing survey 2' (or otherwise referred to in this case study as the 'Survey'). The stated purpose of the Survey is to 'monitor community wellbeing and functioning over time with representative samples of residents in the Western Downs using reliable and valid measures'.[1] The Survey addressed the following GISERA objectives:[2]

- Carrying out of research and improving and extending knowledge of social and environmental impacts and opportunities of CSG-LNG projects for the benefit of the CSG-LNG industry, the relevant community and the broader public.
- Informing government, regulators and policy-makers on key issues regarding policy and legislative framework for the CSG-LNG industry.

This case study provides information for accountability, communication and continual improvement purposes. It considers the impact of the Survey from two perspectives:

1. against the objectives set for the Survey
2. the other or unintended benefits that may have been generated from the Survey's inputs, activities, outputs and outcomes.

[1] GISERA 2015, 'Project Order Proformer', Internal Document Supplied by GISERA.

[2] GISERA 2015, 'Project Order Proformer', Internal Document Supplied by GISERA.

The audience for this case study is internal to CSIRO. However, the information provided may be useful for communication and engagement with Members of Parliament, Government Departments, the CSG industry and the general public about GISERA research projects.

1.1.2 Project origins

In 2014, around the peak of CSG construction activity in the Western Downs Region of Queensland, CSIRO conducted a comprehensive survey of community wellbeing, community resilience, and community attitudes and views towards CSG development. The survey results identified key contributing factors to levels of community wellbeing, resilience and adaptation in the context of CSG development. The survey results provided insight into acceptance of CSG development within the community and the underlying drivers of that acceptance.[3] They also provided robust and comprehensive baseline data about community wellbeing, resilience, adaptation and acceptance that enables CSIRO, governments, research and other community stakeholders to monitor changes in these aspects over time.

The 2016 survey was a response to community, industry, and other stakeholder requests for a longitudinal study of the effects of the CSG industry on community wellbeing and resilience. CSG development was at that time relatively new to Australia and Queensland. Lessons from international studies related primarily to shale gas activity in the United States (US), and while useful, did not provide the data relevant to inform decision making in the Western Downs region. Thus the key challenge was to find the best ways to maintain, and potentially grow, community wellbeing and adaptive processes through the various development phases of the CSG industry. The 2016 survey project builds on the findings of the initial survey completed towards the end of the construction phase and makes comparisons with wellbeing in the operations and maintenance phase. This was important because in 2016 the region had experienced a major economic slowdown ('bust') associated with the completion of the construction phase and a decline in industry activity.

The primary purpose of the second survey was to monitor community wellbeing and functioning over time with representative samples of residents in the Western Downs and eastern Maranoa regions using reliable and valid measures established in the initial survey. These measures included:

- Community wellbeing measures, which measured 15 dimensions of wellbeing developed from the literature and earlier GISERA research[4], covering social, environmental, political, services and facilities, economic, and health factors, as well as overall community wellbeing
- Community resilience and adaptation measures, which were considered from four perspectives:
  - Community resilience actions, which used eight measures to assess survey respondents' perceptions of community activities in response to changes caused by CSG
  - Collective efficacy, which used two items to measure the community's willingness to work in partnership with government and industry to deal with the challenges/opportunities of CSG
  - An overall evaluation of the ability of community to deal with change due to the development of the CSG industry
  - The ability and capacity of the community to cope and adapt to different challenges
- Expected future wellbeing measures, including comparisons of expectations in the 2014 survey with actual community wellbeing in 2016.
- Community acceptance measures which seek to understand the attitudes and feelings of survey respondents towards CSG development.

The 2016 Survey achieved a high response rate of 44.8 per cent (up from 25.6 per cent in 2014), resulting in 500 residents surveyed. Approximately 200 of the same respondents from 2014 were surveyed in 2016.

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[3] CSIRO, 2016, *The 2016 CSIRO Community Wellbeing and Responding to Change survey: Western Downs region, Queensland—Changes between 2014 and 2016 in the Context of Coal Seam Gas Development.*

[4] Walton, A. M., McCrea, R., Leonard, R., & Williams, R. (2013). Resilience in a changing community landscape of coal seam gas: Chinchilla in southern Queensland. Journal of Economic and Social Policy, 15(3), 0_1.

The project built on three years of prior research in the Western Downs region of Queensland on aspects of community wellbeing, and on consultation with the communities, CSG companies, and other stakeholders by the research team, which has involved both qualitative and quantitative studies. A third survey is planned for 2018, however, this survey is yet to receive funding approval from GISERA or CSIRO.

1.1.3 Project inputs

The project was supported through funding and in-kind support from GISERA and CSIRO. A summary of this support is provided for the 2016 Survey in Table 1.1 below.

Table Error! No text of specified style in document.**.1** Support for the project

Contributor / type of support	2015-16 ($)	2016-17 ($)	Total support ($)	Percentage of total budget
Cash				
GISERA	60,000	25,000	85,000	47
In-kind				
CSIRO	70,770	24,709	95,479	53
Total	130,770	49,709	**180,479**	100

1.2 Project activities

The key activities of the project can be categorised as the design and administration of the survey, the analysis of survey responses, reporting the results, stakeholder engagements, and extension of the results to local communities, governments and industry. These different elements of the project are discussed in the sections below.

1.2.1 Survey design and administration

The 2014 Survey was based on an extensive literature review and consultations with key stakeholders, and the 2016 Survey was revised following further consultation with key stakeholders. The survey was conducted during January and February 2016. Discussion with key stakeholder included the State and local governments, CSG companies (subject matter experts), and key local community and landholder groups. New open-ended questions were added to the survey about the ongoing interactions between community (including landholders) and CSG companies and how any problems might be addressed in the future.

The survey was conducted by telephone. It took approximately 30 minutes to complete. 500 people were asked 129 questions about their views on the quality of life in their community, how they felt their community was adapting and responding to changes, and what their expectations were for their community's future. They were also asked about their attitudes and feelings towards CSG development in their area.

1.2.2 Analysis and reporting of survey results

The 2016 Survey was analysed both in terms of current wellbeing and adaptation and in comparison with the 2014 survey using multivariate statistics and modelling. The results were presented in a variety of ways that were relevant to, and easily understood by, the community and other stakeholders. All reports, fact sheets and research communiques were made accessible to the general public.

1.2.3 Stakeholder engagement and extension of the research

The 2016 Survey findings were discussed directly with the community, CSG companies (subject matter experts), State and local governments and other stakeholders. These discussions were used to identify opportunities for future collaborations and to encourage the uptake of the results in their future plans.

Meetings and workshops were also organised by the researchers and provided opportunities for discussion of the findings. They included GISERA forums, government forums, university seminars etc. If funding continues for the Survey these discussions, meetings and workshops are planned to continue into the future.

1.3 Project outputs

The following outputs were identified during discussions with the leads and sponsors of the project. Google analytics data for the GISERA website show that the webpages which host information about these outputs were viewed approximately 600 times by more than 400 unique visitors in 2017.

1.3.1 Technical report

The community functioning and wellbeing survey 2 has been analysed and published as a publicly available technical report titled: *The 2016 CSIRO Community Wellbeing and Responding to Change survey: Western Downs region, Queensland—Changes between 2014 and 2016 in the Context of Coal Seam Gas Development*.[5]

The technical report analyses perceptions of wellbeing, resilience, adaptation to change, and expected future wellbeing within five communities affected by CSG development in the Surat Basin. It documents how these aspects have changed over a two year period, during which time the region has experienced considerable change in the activity of the CSG industry.[6] A scientific paper based on the report findings is currently under review by an internationally, peer-reviewed journal.[7]

1.3.2 Communiques, fact sheets and information

A communiqué highlighting key survey findings and opportunities for collaborative action between the Queensland and local governments, communities and CSG companies has been published on the GISERA website, titled: *Community wellbeing and adapting to coal seam gas: Survey highlights and key messages: The Western Downs region in Queensland, Australia*.

Since 2013, GISERA has published a number of fact sheets (approximately 25 in total) on its website. A number of these fact sheets have drawn on the research and outcomes from the 2014 and 2016 surveys. These factsheets cover a range of topics including community resilience, adaptation and wellbeing, and social licence to operate. The fact sheets can be found at: https://gisera.csiro.au/factsheet/

In addition, GISERA researchers have given many presentations about onshore gas development and its impacts and opportunities to scientists, students, teachers, the general public, industry stakeholders, government departments and members of parliament since GISERA's launch in July 2011. Some examples of the presentations given about the survey are provided below:

- Social Research Survey Report, presented at the Social and Economic Transfer Session, December 2017
- 2017 GISERA Symposium, presented in Brisbane, October 2017
- A conceptual model of socio-economic impacts of unconventional fossil fuel in host regions, presented at the Energy Impacts Symposium, Ohio, United States of America, July 2017
- CSIRO 2016 Community Wellbeing and Responding to Change, presented at Social and Economic Knowledge Transfer Session, December 2016

[5] A copy of the report can be found at: https://gisera.org.au/wp-content/uploads/2017/01/community-wellbeing-survey-2-report_final.pdf

[6] Walton A., McCrea, R. and Leonard, R., 2016, *The 2016 CSIRO Community Wellbeing and Responding to Change survey: Western Downs region, Queensland—Changes between 2014 and 2016 in the Context of Coal Seam Gas Development.*

[7] McCrea, R., Walton, A. and Leonard, L. (under review) Rural communities and unconventional gas development: What's important for maintaining community wellbeing and resilience over time?, *Journal of Rural Studies*

— CSIRO 2016 Community Wellbeing and Responding to Change, presented at AgForce Chinchilla Research Forum: Agriculture, Communities and Coal Seam Gas, November 2016

— Economic and socioeconomic impacts of CSG development, presented to the Resources and Energy Workshop: Australian Government Office of the Chief Economist, Canberra, Australia, November 2015

The full list of these presentation can be found at: https://gisera.csiro.au/more-information/presentations/

1.3.3 Stakeholder engagement

Findings from the 2016 Survey have been communicated to various community, government and industry groups through facilitated discussions, seminars and briefings. The bulk of this engagement occurred between November 2016 and February 2017.

Examples of the consultations held include:

— discussions with the community development team and the Counsellor for Community and Cultural Development, both from the Western Downs Regional Council

— meetings with a wide range of community, industry, academic and government representatives in a research forum on 'Agriculture, Communities and Coal Seam Gas' held in Chinchilla by the University of Queensland and AgForce

— discussions with farmers at a small group discussion with the Basin Sustainability Alliance

— briefings to the Department of Natural Resources and Mines (CSG Engagement and CSG Compliance Units) at a Research Forum on CSG Social Impacts in Toowoomba

— meetings with key industry and government stakeholders from Queensland and NSW in a social and economic knowledge transfer session and video conference at CSIRO, Dutton Park

— briefings with community engagement and social investment staff from Shell (QGC) at Shell's Brisbane offices.

A summary of the number of engagements undertaken by the research team and members of GISERA more-broadly are shown in Table 2 below.

Table 2 Number of stakeholder engagements 2015-16 and over the life of GISERA

Stakeholder	Number of engagements	
	2015-16 (Community Wellbeing and Functioning Project)	Over the life of GISERA
Regional community	11	36
Gas industry	40	123
Federal, State and Local Departments and Agencies	49	159
Media (includes print, TV and radio)	16	91
School, education institutions and students	0	11
Research organisations	23	100
Industry associations	8	85
Business groups	4	36
Total	**151**	**641**

Note: Engagements relate to GISERA's activities more broadly
Source: GISERA, https://gisera.csiro.au/wp-content/uploads/2017/11/Annual-Research-Development-Plan-and-Budget-2016-17-1.pdf

1.3.4 Publications

The most significant publications from the 2014 and 2016 surveys are listed below:

Walton, A., McCrea, R., and Leonard, R. (2016). *The 2016 CSIRO Community wellbeing and responding to change survey: Western Downs region, Queensland—Changes between 2014 and 2016 in the Context of Coal Seam Gas*

Development. CSIRO report. CSIRO Australia. Retrieved from https://gisera.org.au/wp-content/uploads/2017/01/community-wellbeing-survey-2-report_final.pdf

Walton, A., McCrea, R., Leonard, R., & Williams, R. (2013). Resilience in a changing community landscape of coal seam gas: Chinchilla in southern Queensland. *Journal of Economic and Social Policy*: Special Edition: The Economic and Social Policy Implications of Coal Seam Gas Mining (CSG) in Australia, 15(3), 1-23.

McCrea, R., Walton, A., & Leonard, R. (2014). A conceptual framework for investigating community wellbeing and resilience. *Rural Society, 23*(3), 270-282. doi: 10.1080/10371656.2014.11082070

McCrea, R., Walton, A., & Leonard, R. (2016). Developing a model of community wellbeing and resilience in response to change. *Social Indicators Research, 29*(1), 195-214. doi: DOI 10.1007/s11205-015-1099-y

Leonard, R., McCrea, R., & Walton, A. (2016). Perceptions of community responses to the unconventional gas industry: The importance of community agency. *Journal of Rural Studies, 48*, 11-21

McCrea, R., Walton, A., & Leonard, R. (under review). Rural communities and unconventional gas development: What's important for maintaining community wellbeing and resilience over time? *Journal of Rural Studies*

Walton, A., McCrea, R., & Leonard, R. (2014). *CSIRO survey of community wellbeing and responding to change: Western Downs region in Queensland*. Australia: CSIRO. Retrieved from http://gisera.org.au/publications/tech_reports_papers/socioeco-proj-3-community-wellbeing-report.pdf.

Walton, A., Williams, R., & Leonard, R. (2017). Community perspectives of coal seam gas development during two phases of industry activity: construction and post-construction. *Rural Society*, *26*(1), 85-101.

Walton, A., Leonard, R., Williams, R., & McCrea, R. (2015). *A review of community concerns about onshore gas development: Challenges and opportunities* (CSIRO report for the Government of Victoria). Australia: CSIRO Retrieved from https://publications.csiro.au/rpr/download?pid=csiro:EP152912&dsid=DS2.

1.4 Status of Outcomes

1.4.1 Nature of Outcomes

The empirical data and evidence about community wellbeing and resilience in the Western Downs Region are the key outcomes of the Survey. This data and evidence provide governments, local authorities, service providers, industries and community members with:

- Robust and independent baseline data for monitoring community wellbeing, resilience, and attitudes towards CSG development
- Improved understanding of *community wellbeing*
- Improved understanding of *community resilience*, in particular, the ability of communities to adapt to change
- Empirical identification and modelling of important drivers of community wellbeing and resilience
- Greater understanding of *community acceptance towards CSG development*, with a particular focus on the attitudes and feelings of local residents directly impacted by CSG development
- Greater understanding of the impacts of different industry phases on community wellbeing, resilience, and attitudes towards CSG development through the use of longitudinal data collection and analysis
- Empirical insight into potential *future community wellbeing* issues and considerations.

These outcomes are discussed in more detail below.

Improved understanding of community wellbeing

The research identified that the largest change between the 2014 and 2016 surveys was the decrease in satisfaction in employment and business opportunities from slightly positive in 2014 to negative in 2016. The largest reported

improvements were satisfaction with roads and the quality of the environment (e.g. a reduction in dust and noise) which were reported as very positive. These changes in wellbeing reflect the shift that occurred between the surveys from a construction phase in 2014 to a post construction phase in 2016, as shown in Figure 2.

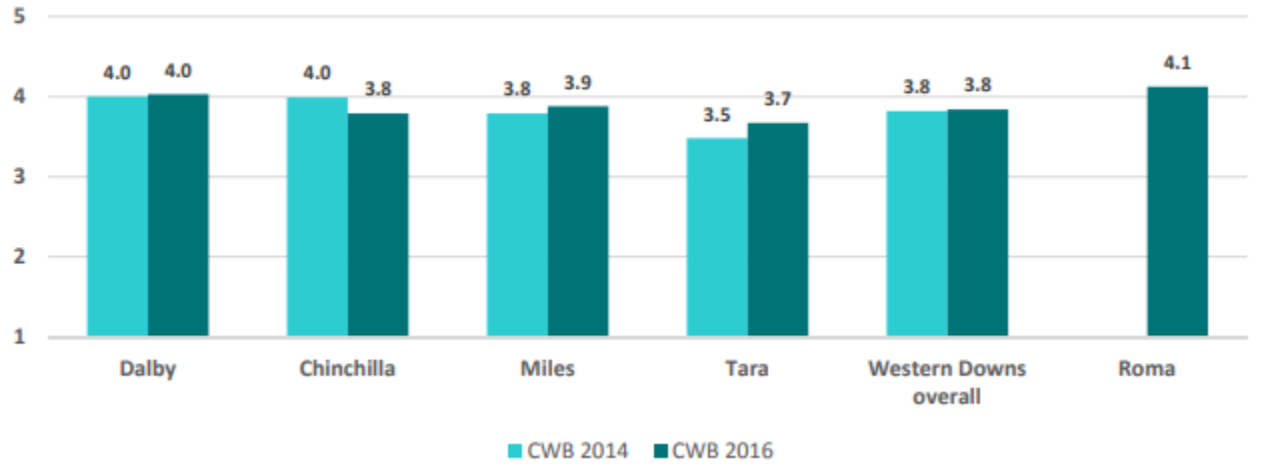
Figure 2 **Community wellbeing dimensions Western Downs: 2014 and 2016**

*Note: * denotes a significant difference between 2014 and 2016*

Source: CSIRO, 2016, *The 2016 CSIRO Community Wellbeing and Responding to Change survey: Western Downs region, Queensland—Changed between 2014 and 2016 in the Context of Coal Seam Gas Development.*

Overall, the Survey results suggest that community wellbeing in the Western Downs Region in 2016 remained robust and similar to 2014 (despite changes to some dimensions of wellbeing being recorded). Figure 3 shows the results of overall community wellbeing for those subregions within the Western Downs Region for the two surveys, as well as a comparison with the Roma subregion.

Figure 3 Overall community wellbeing for the Western Downs Subregions captured in the 2014 and 2016 surveys



Note: CWB = Community Wellbeing

Source: CSIRO, 2016, *The 2016 CSIRO Community Wellbeing and Responding to Change survey: Western Downs region, Queensland—Changed between 2014 and 2016 in the Context of Coal Seam Gas Development.*

In addition to overall wellbeing, the Survey considered the most important dimensions of community wellbeing. These dimensions were used to identify the drivers for community wellbeing in each of the subregions surveyed. In 2016, the underlying drivers of community wellbeing were the 'level of services and facilities, social interaction, community spirit, personal safety, and employment and business opportunities'. The Survey found that the other dimensions of were not significant drivers of community wellbeing.

Figure 4 below recreates a chart from the 2016 Survey which combines the level of importance of a particular dimension (as shown in the figure as the size of the bubble) with the level of satisfaction in which it is viewed by participants (as shown by the height of the bubble). A dimension that is below the red line (or a rating of 3) denotes a dimension that respondents assessed to be negative in 2016.

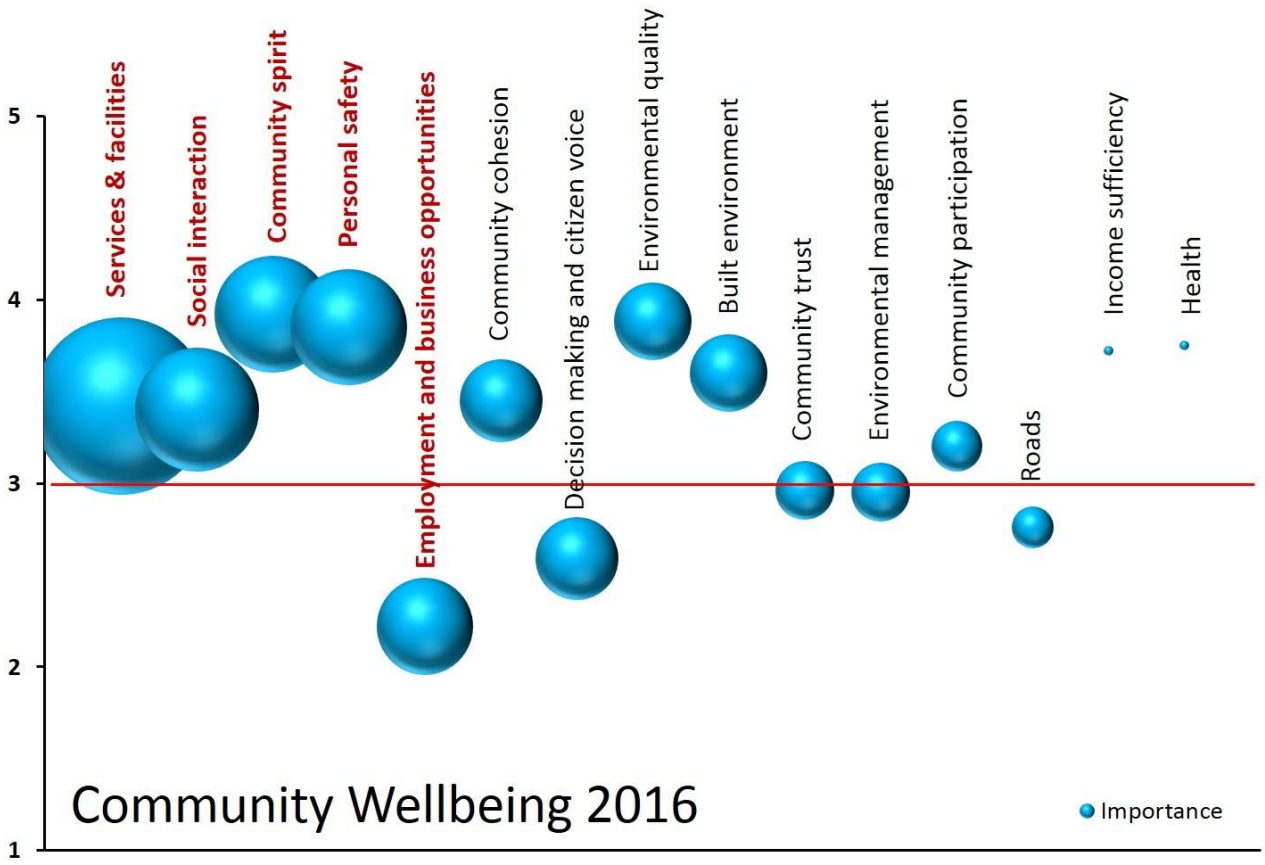
The Survey results show that the most important dimensions (or drivers) of community wellbeing remained similar in 2014 and 2016. In particular, 'services and facilities, social interaction, personal safety, and community spirit' were important dimensions in both years.

The results reaffirm the importance of 'services and facilities along with a range of social factors in contributing to community wellbeing in the Western Downs Region'.[8]

By identifying the underlying drivers of community wellbeing, the research provides valuable information on where to focus scarce and valuable resources so that programs and initiatives can help to strengthen community wellbeing.

[8] CSIRO, 2016, *The 2016 CSIRO Community Wellbeing and Responding to Change survey: Western Downs region, Queensland—Changed between 2014 and 2016 in the Context of Coal Seam Gas Development.*

Figure 4 The drivers of community wellbeing



Notes: Red font denotes the most important, statistically significant predictors of community wellbeing. The size of the bubbles indicates the relative level of importance of that dimension to community wellbeing. The height of the bubbles indicates level of satisfaction with dimension on a score from 1 to 5 where 1 is the least and 5 is the most satisfied. A score below 3 is an unsatisfactory perception.

Source: CSIRO, 2016, *The 2016 CSIRO Community Wellbeing and Responding to Change survey: Western Downs region, Queensland—Changed between 2014 and 2016 in the Context of Coal Seam Gas Development.*

Improved understanding of community resilience

Survey respondents were asked to reflect on a range of community actions undertaken in response to CSG development. Respondents were asked about planning, leadership and information, which are considered necessary components for responding strategically to change. In addition, respondents were asked about the community's ability to work together to address changes related to CSG development.

The 2016 Survey results suggest that strategic community actions, in terms of planning, leadership and accessing information to effectively deal with change were viewed negatively. While respondents viewed community action which was collaborative and involved the sharing of resources and information, and demonstrated a commitment to the community's future, as far more positive.

These results are illustrated in Table 3 below. They show that perceptions of overall community resilience in the Western Downs region remained about the same between 2014 and 2016. Analysis of these results undertaken by subregion and for in and out-of-town respondents showed no significant differences in the perceptions of community resilience between these respondents, on average.

The research identifies activities which contribute to high community functioning and adaptation. This is important when a considerable percentage (45 per cent) of residents believed that their community was only just coping or not coping with changes from CSG development. The survey showed that when people felt their community resilience actions were

high they perceived their community as adapting and coping well with CSG. Also important was community trust, being listened to and heard, employment and business opportunities, and good environmental management for the future. When these were like view positively, respondents also felt more optimistic about their future.

Table 3 Community resilience actions—2014 and 2016

Community actions	2014	2016
Acting strategically		
There is good **planning** for the future for this town and surrounds	2.79	2.70
There is adequate **leadership** within the community to deal with these changes	2.82	2.83
The community can **accesses relevant information** to deal with change effectively	2.93	2.95
Overall, the community is **responding strategically** to CSG activities	NA	2.79
Working together		
Good working relationships exist among community groups	3.69	3.48
The community shares resources,, information and learnings	NA	3.35
There are **key people** in our community who know the right people to get things done	3.20	3.44
Overall, the community is **working together** in responding to CSG activities	NA	3.12
Local residents, government, business and resource companies: All these groups can **work together** to *address* problems associated with CSG development	3.15	3.07
Local residents, government, business and resource companies: All these groups can **work together** to take advantage of the *opportunities* associated with CSG development	3.23	3.14
Community commitment		
The community can **persevere** to find solutions for its problems	3.30	3.25
The community is able to **support its volunteers** over the longer term	3.31	3.33
The community **gets involved** in responding to changes	NA	3.26
Overall, the community is **committed** to their local area's future	NA	3.70
Overall		
Overall I am satisfied with the way the community is responding to the changes	3.21	3.37
Overall community resilience	3.16	3.15

Note: Overall community resilience based on common items between 2014 and 2016. NA = Not Applicable

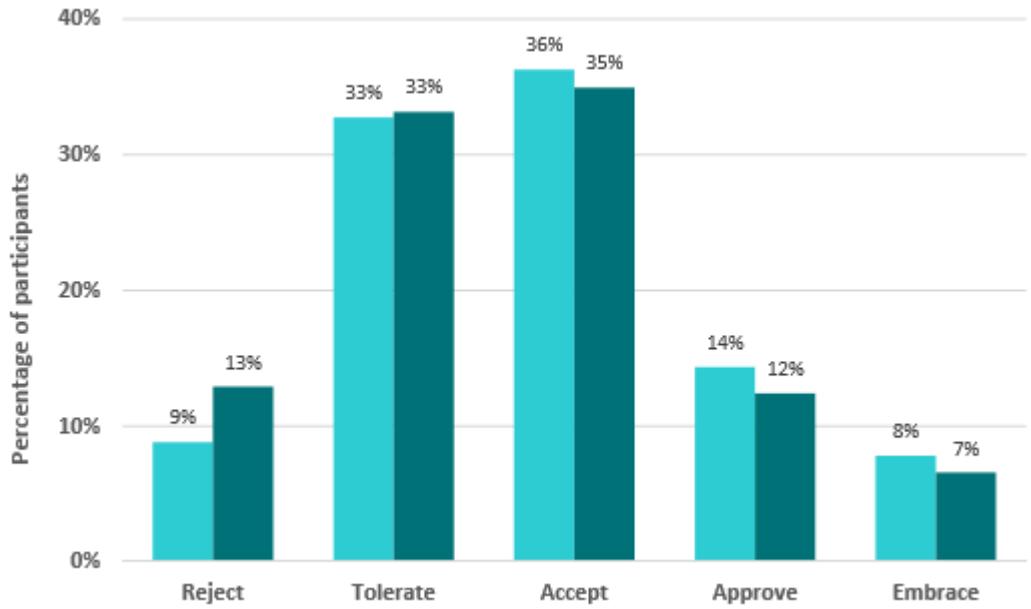
Source: CSIRO, 2016, *The 2016 CSIRO Community Wellbeing and Responding to Change survey: Western Downs region, Queensland—Changed between 2014 and 2016 in the Context of Coal Seam Gas Development.*

Greater understanding of community acceptance of CSG development

The Survey considered community attitudes towards CSG and compared these attitudes to 2014 levels. In 2016, the research demonstrated a similar pattern of acceptance to 2014, with a spectrum of community views ranging from 'reject' through to 'embrace'. However, the results showed that the majority of respondents (80 per cent) either tolerated (33 per cent), accepted (35 per cent) or approved (12 per cent) of CSG, as presented in Figure 5 below.

A similar range in views when respondents were asked about the positive (i.e. pleased, sad and excited) feelings and negative (i.e. angry, worried and sad) feelings towards CSG development. This contrasts with many public and social media representations of views of locally affected communities towards CSG development.

Figure 5 Attitudes towards CSG development—2014 and 2016 survey results



Note: The figure a recreation of a figure presented in the Technical Report

Source: CSIRO, 2016, *The 2016 CSIRO Community Wellbeing and Responding to Change survey: Western Downs region, Queensland—Changed between 2014 and 2016 in the Context of Coal Seam Gas Development.*

The Survey also identified differences in attitudes based on whether people lived in-town or out-of-town, and among different sub-regions within the Western Downs and Maranoa. These results clearly demonstrate that there is a diversity of community attitudes towards CSG (i.e. there are positive and negative attitudes), which was a surprising outcome of the research. Consultation with the project leaders undertaken for this case study suggests that both industry and government had previously assumed community sentiment towards CSG was overwhelmingly negative. The research helps communities to understand these different views towards CSG development. The challenges and opportunities associated with CSG development vary for different segments of the community. Understanding and respecting these differences and tailoring initiatives will help to maintain community cohesion and mitigate unintended outcomes.

The Survey results also provided insight to industry and government about the underlying drivers of attitudes and feelings and to adopt policies and strategies which addressed these drivers. The drivers identified by the Survey included:[9]

- The level of trust in CSG companies
- Whether CSG companies include local residents in their decision making (i.e. procedural fairness)
- Levels of satisfaction with the environmental management of underground water for the future (i.e. environmental management)
- Whether local businesses are doing well out of CSG activities (i.e. perceived benefits)
- Perceptions of how well their community was adapting to CSG development (i.e. community functioning).

Improving landholder relationships with gas

The results showed that farmer attitudes and feelings toward CSG remain negative on average. Farmer relationships are key to a socially sustainable relationship between industry and the community. Ongoing mistakes, whether major or

[9] CSIRO, 2016, *The 2016 CSIRO Community Wellbeing and Responding to Change survey: Western Downs region, Queensland—Changed between 2014 and 2016 in the Context of Coal Seam Gas Development.*

minor, undermine farmers' perceptions of CSG company competence. This reduces trust and damages the reputation of the company more broadly. For the farmer, time spent addressing issues adds to the burden of co-existing with CSG.

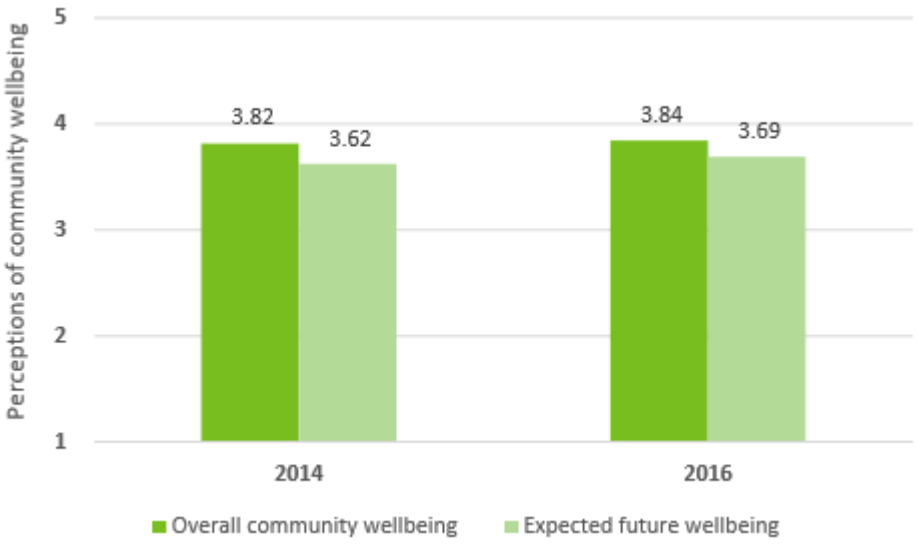
The research identified key messages for improving landholder relationships, which included:

- Building the capability of on-farm gas workers to perform their activities in a way that supports optimal farmer and CSG company relationships
- Developing industry standards to ensure high standards of on-farm behaviour and activities so that the relational aspects of conduct and compensation agreements (CCAs) are upheld
- Minimising turnover of local company contacts and employing those with an understanding of local and rural issues whenever possible.

Empirical insight into future community wellbeing

The Survey also reported respondent views about the levels of current and future community wellbeing of the Western Downs Region. The 2016 and 2014 survey results are shown in Figure 5.

Figure 6 Overall community wellbeing versus expected future wellbeing



Note: The figure a recreation of a figure presented in the Technical Report

Source: CSIRO, 2016, *The 2016 CSIRO Community Wellbeing and Responding to Change survey: Western Downs region, Queensland—Changed between 2014 and 2016 in the Context of Coal Seam Gas Development.*

The results show that the community's views of both their current and future levels of wellbeing were similar in 2014 and 2016. The Survey results varied for those respondents living in subregions and in-town and out-of-town. The subregions of Dalby (4.0 in 2014 to 3.8 in 2016), Chinchilla (3.8 in 2014 to 3.6 in 2016) and Miles (3.9 in 2014 to 3.6 in 2016) expected their future community wellbeing to decline significantly in the 2016 Survey. The other subregions expected their future community wellbeing to remain largely unchanged. In addition, the Survey also demonstrated that respondents living in-town expected their future wellbeing to decline more than those living out-of-town. This data was a change to the 2014 survey which showed that respondents living both in- and out-of-town expected their future community wellbeing to decline at similar rates. Interestingly, expectations of declining future wellbeing in the 2014 survey were not born out in the 2016 survey.

These survey results provide a platform for future research and policy development. The results provide researchers, state governments, local councils, local service providers and industries with baseline data which can be used to assess the effectiveness of policies, programs and investments which seek to minimise the negative impacts of CSG on community wellbeing.

1.4.2 Beneficiaries of the Survey

Consultations undertaken for this case study have identified three beneficiaries of this research:

- Local and state governments which are responsible for the development and implementation of planning and regulatory frameworks for CSG.
- Industry which includes current and potential CSG operators in Western Downs region and elsewhere.
- Local service providers and not for profit agencies which can better tailor their services and support to meet community needs and opportunities associated with the CSG industry throughout various stages of its development.
- State and federal government planners and decision makers.

1.4.3 Counterfactual

Prior to the project, relevant Australian community-level data about the impacts of CSG did not exist. There is existing data about the impact of shale gas exploration in the US, however consultations undertaken for this case study suggest that this data holds little relevance to CSG development in the Western Downs and Australia more broadly. This is because the exploration and extraction processes for shale gas is significantly different to CSG, as well as the regulatory, institutional, legal and social environments. Thus, CSG development in Australia has different impacts on local communities. It is also because the shale gas exploration and production has occurred in parts of the US for many decades and the local area issues/impacts are profoundly different to those in the Western Downs where CSG is a relatively new phenomenon.

Furthermore, empirical measurement of community wellbeing, resilience, and attitudes was lacking in CSG development areas. This research provides the only data from a randomly selected representative sample of citizens experiencing major CSG development. Also, it is the only longitudinal evaluation of impacts and changes specific to CSG development and thus provides baseline data suitable for assessing changes over time. This suggests that without GISERA and CSIRO's cash and in-kind support for this project, it is unlikely that such data would exist today.

1.4.4 Attribution

Consultation with the project leaders and representatives from GISERA have suggested that a significant proportion of the benefits generated by surveys can be attributed to GISERA. Given the lack of robust and relevant data about the perceived impacts of CSG on local communities prior to the 2014 and 2016 surveys, it is ACIL Allen's opinion is that a high proportion of the benefits generated can be attributed to the research project.

1.4.5 Adoption

Stakeholders consulted have commented that the research has been used by some government officials and industry stakeholders since 2014. These stakeholders note the active stakeholder engagement and research extensive program undertaken by GISERA since the project commenced as the key reason for the adoption of the research.

1.5 Assessment of impacts

1.5.1 Nature of the impacts

Good quality community level social research has impact. We know it can contribute to better functioning communities, improved public policy, enhanced quality of life, social cohesion and institutional development. We also know that good quality social research can influence the commercial and economic outcomes of the communities and industries being examined.

However, measuring these impacts can be challenging. Measurement is often constrained by data unavailability and the difficulties in demonstrating the causal linkages between research and the impacts being observed. These constraints make quantitative assessments of impact problematic, but give rise to qualitative and descriptive accounts of impact.

Given the nature of the Survey (which is essentially robust information that informs decision making), this case study examines impact from the perspective of its influence on key decision makers in government and industry. It does not attempt to quantify the impact of this influence.

Stakeholders consulted for the case study have suggested that, at this stage, quantifiable financial, economic or policy impacts have not emerged from the research. This is in contrast to the other case study assessments undertaken by ACIL Allen for GISERA which are able to identify and then quantify a selection of the benefits from the research.

1.5.2 Impacts to date

As previously mentioned, the impacts of research are assessed from the perspective of those stakeholders who use it. To this end, a small number of representatives from government and industry were consulted to provide their insights about the research and the impact it has had on their organisations. From these consultations, the impacts can be described as influence over:

- government decision making and community interactions
- industry decision making and community interactions.

Impact on government

Consultations with representatives from the NSW and QLD governments suggest that the research has had an immediate impact on selected government officials with responsibility for CSG in QLD and NSW. These impacts, as described to ACIL Allen, are detailed below.

QLD Government

Consultation with a representative from the QLD Government suggests GISERA's research has been useful in helping government to shape its consultation approach. According to this stakeholder:

> I see GISERA as a trusted advisor. I've spent time with them, being briefed and unpacking the research findings. The thoroughness of GISERA's methodology and the quality of its research makes them very trust worthy. It means I can use the research to inform my work.
>
> *Government stakeholder consulted for this case study.*

In particular, it has informed how Government conceptualises stakeholder consultation under the Annual Exploration Plan (AEP). The AEP provides a release schedule for exploration opportunities in each financial year and identifies Governments priorities for the responsible development of petroleum and gas, minerals and coal resources in QLD. The AEP also outlines the tender process and provides details of the targeted commodities, location of each exploration tender area and the timing of each competitive tender process.[10]

Prior to the AEP directly affected stakeholders (including landholders, traditional owners and local governments) were often notified about a potential exploration when an exploration company 'knocked on someone's door'. Now under the AEP, Government has a much stronger communication platform and process to consult with affected stakeholders which ensures they are better prepared for, and can more effectively participate in, decisions about future exploration projects.[11]

Consultation suggests that GISERA's research has been useful in shaping the way direct engagement with landholders and affected stakeholders prior to exploration activity occurs. The benefit of this approach was summarised during consultations:

> In the past, an exploration company would knock on the door of a landholder and that would be the first time he/she would hear about a proposed exploration. This approach was not very productive and did little to build trust and acceptance with the

[10] https://www.business.qld.gov.au/industries/invest/mining/exploration-incentives/annual-exploration

[11] https://www.business.qld.gov.au/industries/invest/mining/exploration-incentives/annual-exploration

> community. Now, under the AEP, we engage with the landholder before the plan is released. While not all land holders are happy about a planned exploration they are better informed and thus better prepared to talk to us or industry about key issues.
>
> *Government stakeholder consulted for this case study.*

Consultations also suggest that the research has shaped Government's consultation processes more generally. For example, Government has moved away from large 'town hall style' meetings, to more intimate settings (say on a property which includes a landholder and his/her neighbours) where a deeper level of engagement can occur. This shift was reported to ACIL Allen as having beneficial impacts on the trust that local communities have with Government, and their overall perception that Government is genuinely listening to key concerns.

NSW Government

Feedback from the NSW Government suggests that Survey results provide NSW with an independent and trusted source of information that can be used to form a balanced view about the Narrabri Coal Gas Project. The Narrabri Gas Project involves the progressive development of a coal seam gas field comprising up to 850 gas wells on up to 425 well pads over 20 years, and the construction and operation of gas processing and water treatment facilities, including:[12]

- a central gas processing facility for the compression, dehydration and treatment of gas
- a water management facility for the storage and treatment of produced water
- an in-field gas compression and water management facility
- water and gas gathering pipelines and ancillary infrastructure.

The project is currently at a mid-point in the project assessment/approvals stage which is due to be completed by the end of 2018. As part of the project development process, the NSW Government has received more than 23,000 submissions from interested parties, with approximately 800 submissions coming from the local area. Feedback from NSW suggests that GISERA's research has been critical in:

- contextualising the submissions received. In particular, the research confirmed that there are a diversity of community views about CSG and these views may not always be represented through a submission process, and thus need to be captured through other means (such as one-on-one consultation with community leaders)
- comparing those data contained within submissions to the data reported by GISERA. This comparison was important for understanding the accuracy or representative nature of data presented in submissions (such as survey data provided by special interest groups)
- reinforcing the need for the Narrabri Gas Project to ensure local community economic and other benefits are captured. This was an important empirical finding for GISERA's research which will influence the structure and objectives of a community development fund that will likely be included in the requirements of the Narrabri Gas Project.

In addition, GISERA's research has helped NSW to identify the potential areas of future concern for communities. This insight will help NSW to shape the final assessment process and to include any additional requirements in the final project determination that help to increase community resilience and wellbeing.

Impact on industry

Independent community level information about CSG is considered to be a benefit to the industry representative consulted for this case study. The research has provided a 'reference point' for understanding the full spectrum of community views and needs in an unbiased way. In the words of one stakeholder:

> There is a lot of noise about coal seam gas. The noisiest voices don't always reflect how all of the local community views CSG. GISERA's research gives us a balanced reading on what the community is thinking. We might not get this view if we undertook the research ourselves.
>
> *Industry stakeholder consulted for this case study.*

[12] http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6456

This stakeholder suggested that the research has had an immediate impact on his organisation's understanding of community views about CSG. This understanding has helped the stakeholder to better communicate local area issues to senior staff within this organisation. This helps the organisation to better position its response to emergent issues by having a platform that helps it to address the issues which are of greatest concern to local communities.

As part of this case study, the stakeholder was also asked to comment on 'whether GISERA was a trusted advisor in the onshore gas research space'. In summary, the feedback is overwhelmingly positive.

> Yes, GISERA is a trusted advisor. We are very supportive of what they do. We respect their independence, and it is crucial in providing us with a balanced position about community feelings towards coal seam gas. The quality of the social research is very high. The research is also particularly relatable and understandable. Unlike some other social research, the GISERA research can actually be applied.
>
> *Industry stakeholder consulted for this case study.*

1.5.3 Potential future impacts

A number of potential future benefits were identified during the development of this case study. They include:

- The avoided costs to government and industry of having to develop and impose new CSG regulations. These regulations would likely impose additional costs on industries during the exploration, construction and post construction phase of CSG. Additional regulations would also be a disincentive to expand CSG operations over time.
- Greater certainty amongst industry that a CSG development will proceed because it intrinsically understands local community issues and can respond to them more effectively. This certainty provides additional incentives for industry to invest in a CSG development over the longer term.
- The ability of local communities to more effectively capture the economic benefits of CSG and to ensure these benefits are not lost to other regions (especially, overseas).

Stakeholders consulted believe that these impacts may take many years to be realised. They also suggest that the impacts will be difficult to quantify and monetarise.

1.6 CSIRO's role as an Innovation Catalyst

Through this research CSIRO has established a set of robust social indicators for monitoring community wellbeing and resilience in context of CSG development. These indicators can be tailored to other industry domains.

CSIRO has developed a theoretical model of community wellbeing and community resilience for empirical modelling. Previously these two concepts have been conflated in the literature. CSIRO has now empirically tested and validated this model, which distinguishes between and clearly defines community wellbeing and resilience.

This research has informed a highly predictive model of SLO, which has been tested in NSW in relation to the Narrabri Gas project. The SLO model has applicability to other research domains and has also been tested in the waste and resource recovery sector in Victoria in relation to communities living near landfills. The findings from the Victorian research contributed to Sustainability Victoria successfully receiving $6.5 million in funding for programs to address the factors driving social acceptance in the industry and waste related education.