Australia's National
Science Agency

GISERA | Gas Industry Social and Environmental Research Alliance

Project Order

Short Project Title

Medium-term socio-economic impacts in Southern Queensland

Long Project Title	Evaluating medium-term socio-economic impacts of onshore gas activity in Southern Queensland
GISERA Project Number	S.19
Start Date	01/02/2023
End Date	31/03/2024
Project Leader	Dr David Fleming Munoz

GISERA State/Territory

- [x] **Queensland**
- [ ] New South Wales
- [ ] Northern Territory
- [ ] South Australia
- [ ] Western Australia
- [ ] Victoria
- [ ] National scale project

Basin(s)

- [ ] Adavale
- [ ] Amadeus
- [ ] Beetaloo
- [ ] Canning
- [ ] Western Australia
- [ ] Carnarvon
- [ ] Clarence-Morton
- [ ] Cooper
- [ ] Eromanga
- [ ] Galilee
- [ ] Gippsland
- [ ] Gloucester
- [ ] Gunnedah
- [ ] Maryborough
- [ ] McArthur
- [ ] North Bowen
- [ ] Otway
- [ ] Perth
- [ ] South Nicholson
- [x] **Surat**
- [x] **Other (Bowen)**

GISERA Research Program

- [ ] Water Research
- [ ] Health Research
- [ ] Biodiversity Research
- [x] **Social & Economic Research**
- [ ] Greenhouse Gas Research
- [ ] Agriculture Research
- [ ] Land and Infrastructure Management Research
- [ ] Other (please specify)

1. Project Summary

This project will study a range of potential positive and negative social, demographic and economic impacts that are commonly linked to onshore natural gas extraction activity, across the regions of the Surat and Bowen basins, in southern Queensland. We will explore and analyse secondary data, primarily from the 2016 and 2021 Australian Bureau of Statistics (ABS) Population Census, to identify and evaluate impacts that natural gas extraction could have had in communities across these regions during the last two decades. Special emphasis will be placed on studying the onshore natural gas extraction activity and connections to local economic functionality, employment changes across sectors, alteration in migration patterns, educational attainment, and youth and women participation in the workforce. The present project will update and expand on the initial 2013-14 GISERA studies of the region (i.e., Fleming & Measham 2014; Measham & Fleming 2015) and expand our knowledge on the positive and negative socioeconomic impacts of extractive industries for the medium-term. These previous studies, also conducted by CSIRO, identified the initial impacts produced by the coal seam gas activity expansion across local economies of the Surat and Bowen basins. [1] The proposed new research project will be informed by, and its outcomes compared to, previous economic studies that GISERA supported for the southern Queensland region and be an opportunity to map out decadal outcomes of gas industry activity in the region.

2. Project description

Introduction

The community level legacy of socioeconomic benefits, costs and impacts of mining and energy industry related activities, are difficult to capture at a single point in time and are rarely monitored consistently over time. This leads to a dearth of evidence in informed discussions and can mean the social licence of an industry and implicit future policy in relation to it is at risk of *ad-hoc* changes, influenced by other factors than the measured outcomes of the industry. The positive and negative social and economic impacts and transitions that can occur in response to energy developments shape how the extraction industry confront their social licence to operate, their relationship with regional stakeholders over time and their legacy (Lacey et al., 2019; Walton, Williams & Leonard, 2017). While many studies have been conducted on the social and economic impacts during the earlier stages of energy developments (e.g., Fleming and Measham, 2014; Walton & McCrea, 2020), and at varying points in time (e.g., Lacey et al., 2017), few analyses have identified the changes that extractive industries bring to regional economies in the medium- to long-terms. Increasingly, there is also a focus on the legacy of extractive developments (e.g., Lèbre, 2021), however, that too leaves

[1] These studies where published in scientific journals, see Fleming & Measham (2014) and Measham & Fleming (2015), and further documentation is available at: GISERA Monitoring regional transitions –https://gisera.csiro.au/research/social-and-economic-impacts-and-opportunities/monitoring-regional-transition/..

knowledge of the social and economic transitions during the medium-term unknown. Consequently, the expectations of communities and the role of government and energy companies – during this medium-term – could be more grounded in evidence, if such analyses existed (Vivoda, Kemp & Owen, 2019).

This project seeks to understand and monitor the social and economic transitions occurring in Queensland's gas fields in response to gas developments, specifically over the medium-term, at approximately 10 years. This evidence could be used to scientifically inform the social impact analysis of Queensland's gas fields during the medium-term and engage with stakeholders to address follow-on implications. This work would serve as a case study to provide insights into how other energy developments should consider their medium-term outcomes at a local level. The research plans to update the original analysis of data starting from 2011 with more recent Census data releases, to further complement the economic studies of the potential negative and positive impacts of energy extraction booms. In addition to standard variables, such as population and skills profiles, the analysis will incorporate an integrated suite of indicators from across all research components including community functioning and well-being resilience, demographics, housing and services and regional economic change.

Prior Research

The aforementioned foundational research, Fleming & Measham (2014) and Measham & Fleming (2015), is the key prior work upon which this project will be developed. This prior research, undertaken by CSIRO and funded by GISERA, used Census data from 2001 and 2011 to identify the initial impacts produced by the coal seam gas activity expansion across local economies of the Surat and Bowen basins of Southern Queensland. These previous studies revealed unprecedented insights into potential boom effects. Key findings included positive job spillover effects, although these were limited to certain types of jobs, and the number of jobs in some sectors decreased. Specifically, employment in the resources sector showed higher growth, as did some non-resources sector employment, in some areas (Fleming and Measham 2014). In the Surat basin onshore gas areas, positive impacts (job spillovers) were restricted to construction and professional services jobs, while agricultural jobs were negatively affected, though this may in part have been due to a drought. Regions with CSG development experienced a growing youth share of the population, including of female (Measham and Fleming, 2015). In CSG regions, a higher proportion of youth with university degrees and advanced technical training was observed. In some CSG regions poverty reduction was found.[2] In combination, the observations signal some mitigating and reversing of rural community decline – a common depopulation trend in many rural regions of the world. To complement the initial analysis, this current research is proposed to undertake further analysis of the medium-term impacts (the past decade), specifically with a focus on whether the outcomes observed previously are

[2] In Measham and Fleming (2014) this was assessed by a poverty line threshold given by families of four (a couple and two children) with incomes of less than the range $599-$999 per week

replicated over time, namely in the last decade, what we are referring to as the medium term, and how the outcomes compare in magnitude to the initial evaluation. Senior economist, Dr David Fleming-Munoz was a key contributor to the foundation project, devising and customising the methods to analyse these outcomes and will lead this subsequent project, drawing on his Resource and Communities focused research team.

Need & Scope

This research will improve the understanding of the social and economic transitions that have occurred since 2001, in regions housing south Queensland's gas fields. This will better enable communities, industries, and government to respond to changes that have arisen from development of the gas fields or potentially from other resource industries in the future. Within the scientific literature, insights into these socio-economic impacts over medium-terms are scarce, thus this project aims to make an important contribution to the literature by observing and evaluating the positive and negative impacts generated by extractive industries in the medium-term (approximately a decade), in regional economies.

In addition, with Australia's plans to reach net zero emission by 2050, and an ambitious 2030 greenhouse gases reduction and renewable energy and associated infrastructure target[3], further transitions in Australia's energy system and the regions to which these are situated are likely to happen over the next two decades. The analysis and findings of this research project can be a basis for informing new opportunities and risks for these industries and regions not just in the initial stage, but also into the medium-term of the energy transition. By providing evidence around the social and economic benefits and negative impacts over time of a resource industry associated with potential 'booms and busts' at the regional level, there is an opportunity to better plan the setup of new industries and the energy transitions in order avoid unintended consequences.

Objective

For communities, industry and policymakers, this project will deliver novel scientific evidence of regional socio-economic outcomes over the medium-term (decadal outcomes) linked with onshore natural gas extraction activity. Specifically, the objectives of this project are to:

- Determine the positive and negative social, demographic and economic impacts that are linked to onshore natural gas extraction activity, across the regions of the Surat and Bowen basins, in southern Queensland. The findings of previous GISERA projects, mainly the foundational project *Monitoring Regional Transition: Coordination across projects and tracking*

[3] Australian Government. 2022. Australia submits new emissions target to UNFCCC. Available at: https://www.industry.gov.au/news/australia-submits-new-emissions-target-to-unfccc. Visited 3rd August 2022.

regional trends (GISERA, Project Number S1)[4], will be used as a baseline to measure these impacts. This analysis will provide impartial evidence to communities, industry and policymakers around the regional socioeconomic outcomes of an industry over the medium-term (decadal outcomes).

- Evaluate and communicate the implications of the analysed impacts for communities, industry and policymakers. The opportunity to assess positive and negative socio-economic impacts over the medium-term will provide unprecedented insights of changes in these regional economies following the initial boom, to inform the development of future resource industries. The results may be used to inform and support change arising from onshore gas developments to enhance regional and community benefit and will provide a legacy of knowledge that enables communities in this and other regions to benefit from future resource developments.

Methodology

Industrial activity, such as onshore natural gas extraction, is often related to socio-economic outcomes for the regions where the activity is located. However, observation and analysis of such is limited, potentially due to data availability, the potential for alternative explanations, and/or the empirical challenges of testing change-over-time. With the benefit of previous pioneering methods employed in GISERA foundational research (Fleming and Measham 2014; Measham and Fleming 2015) that assessed socioeconomic outcomes during the initial onshore gas boom in Southern Queensland, this project will draw on a similar research design and method of analyses. While also extending the foundational research approach to consider further points in time. Consequently, the methodology will have the advantageous characteristics of providing neutrality and potential to infer causation, through being a natural case study of quasi-experimental conditions, with quantitative analysis of objective socio-economic measures overtime. Following are methodology details pertaining to specific tasks.

Task 1. Initial project management (e.g., research data plan, initial project factsheet)

CSIRO's relevant guidelines for socio-economic research and data management will be consulted for this project. This will include a submission to the CSIRO Social Science Human Research Ethics Committee (CSSHREC) and the development of a Research Data Planner. The data that will be utilised in the analysis is publicly available, secondary data and a proportion has already been analysed in the foundational research publications (Fleming and Measham 2014; Measham and Fleming 2015). However, projects that access data, such as the proposed, do have sensitivities to consider, including ensuring that there is no harm, such as identification of (or anonymity breach for), people within the

[4] As previously noted, all documentation, including publications of the foundational project are available at: GISERA Monitoring regional transitions – https://gisera.csiro.au/research/social-and-economic-impacts-and-opportunities/monitoring-regional-transition/

regions. The Research Data Planner is a brief report that will document the type of data to be used and the potential empirical models to be employed. The Research Data Planner process and advice from CSSHREC will aid in managing the integrity of the research, not only during the project activity, but also ongoing management of data. At this stage, an accessible factsheet of the project, resembling the Research Data Planner (including objectives and research design), will be produced to be accessible to all stakeholders via the GISERA website.

Task 2. Literature review and data collection

Literature on the impacts of resource developments over time is scarce, especially of the medium-term. However, the foundational publications, Fleming and Measham (2014) and Measham and Fleming (2015), have amassed over 50 citations. Thus, there will be a thorough review of the citing works, along with a wider search for research seeking to also observe the impacts of resource developments overtime, and grey literature, such as industry and government policy announcements that may be relevant. A search for potentially similar or relevant data will also be conducted, because although the data required for this project exists, as compiled for the foundation project (2001 to 2011) and with the ABS for recent periods, there may be other data of interest, and informative to review. Data sourced specifically for the analysis will include that which is available alongside the foundation articles (held by the Journal publishers and/or CSIRO data portal), and from the ABS. The initial data spans from 2001 to 2011, and the more recent periods that will be sourced up to the 2016 and 2021 censuses. The data will include indicators of economic growth, such as employment trends, and demographic change. Task will result in a master data file, and a literature review and data description report. The report will identify relevant literature contributions and gaps, implications for current project, and a summary of the data to be analysed, with descriptive statistics and empirical caveats.

Task 3. Draft working paper(s): preliminary analysis and CSIRO review

To identify the socioeconomic effects associated with the onshore gas development in the regional economies of the Surat and Bowen basins of Queensland, the research project will analyse ABS Census data at regional statistical area (SA) and local government area (LGA) levels within the state, and with comparisons over time, the more recent periods of 2016 to 2021, and to the initial data points of 2001 and 2011. This method will afford quasi-experimental conditions provided by onshore gas extraction area – Surat and Bowen basin regions benchmarked to regions without this development throughout Queensland. Regions without development will be identified with statistical approaches to obtain a robust comparable set of regions (control regions). This approach will be consistent with Fleming and Measham (2014). Treatment regions will be given by SAs and LGAs within the Surat and Bowen Basin where CSG wells have been largely placed, and control regions will be SAs and LGAs outside of these basins, with no CSG development. Analyses will involve spatial (regional) statistical comparisons and modelling of multiplier effects. Specifically, the methods of the project will consider:

- Economic growth models to estimate main drivers of growth in treatment and control regions. Such models will allow us to understand how treatment regions have performed economically in recent years and analyse how and why they differ from the economic performance of regions with no onshore gas activity.
- Difference-in-difference econometric models to identify and estimate impacts generated by the onshore gas industry. This type of model will identify causation of the effects from onshore gas activity, controlling for confounding factors such as drought events and external influences.
- Job spillover statistical models to evaluate flow-on effects of onshore gas activity on employment trends in other sectors such as local services and agriculture. This analysis will allow to estimate the economic effects that the onshore gas activity has produced over employment generation in other sectors. This will include analysis of effects on direct (supply chain) and indirect (non-related services and others) sectors.
- Analysis of key trends and spatially explicit indicators such as regional migration and the change in the regional share of youth employment. This analysis will provide further insights to observe how community welfare and social dynamics have changed in CSG regions over time.

Key trends and findings will be visually presented including through GIS mapping. We anticipate the results could benefit from being represented across more than one scientific paper. During this task we will also seek feedback through the formal CSIRO peer review process.

Task 4. Preliminary communication of findings

The draft working paper(s) will be shared across key stakeholders to initiate the dissemination of early findings. Stakeholders to consult would include:

- CSIRO GISERA colleagues (e.g., communications advisers) and other CSIRO proponents will be informed of the research, including the findings and discussion of their implications. This process will take place through a combination of email, and internal meetings, with both the working paper draft(s) and summary slide packs.

- Initial external critique of the science will be sought with experts: Preliminary findings will be presented in at least one applied economics scientific conference, to expose methods and analysis to an international audience of experts and obtain feedback. This feedback will be used to improve the analysis and confirm that it is based on robust and leading-edge economic methods.

Task 5. Communicate project and findings more broadly

Communication is a process that will be maintained throughout the project, with peaks in activity during Task 1 and Task 4 – already detailed. However, most communication activities will occur during Task 5. It is in Task 5 that efforts will be made to disseminate and engage a wider range of key stakeholders, as prior to this the emphasis will be to gaining mostly expert feedback to be able to contextualise the findings in discussion.

The broader communication activities during Task 5 will include:

1) Use of working papers and submission to scientific journal(s): As part of demonstrating the science is robust and trustworthy, and making it widely available, the working papers will be submitted to scientific journals. Prior to the submission process, a formal ePublish review will be undertaken and any notable changes, will be shared with GISERA colleagues. It is likely there will be at least some iterations within the journal review process. However, considering that journal publication processes can take a while and are beyond the research team control, the produced working papers will be used as base to commence on outreach and dissemination of findings. With the completed working papers, a brief project completion report will be submitted to GISERA and ethics.

2) Two project factsheets: A factsheet, hosted on the GISERA website, will be developed at commencement of project, and another that will include peer-reviewed results and implications will be developed at completion of project. The potential to develop videos or animation or data storymaps will also be considered following the advice of GISERA communication advisors.

3) Knowledge transfer session with Government/Gas Industry: This is a standard expectation of GISERA projects, however, highly relevant to this research and this activity will be further developed with communication advisors and other stakeholders, as relevant. The session is likely to involve a discussion of how metrics and methods can serve to policymakers and other stakeholders, as well as further evaluation of the scientific approach employed to inform future science and planning of resource developments and their management.

4) Presentation of findings to regional community stakeholders: Regional community stakeholders such as business and/or community groups will be invited to a community forum, both to learn of and share their reflection on the findings. Invitations will be made by reaching groups such as the Toowoomba and Surat Basin Enterprise. One session to present findings will be held in conjunction to the GISERA project “CWB4: Trends in community wellbeing and attitudes to CSG development – Comparisons across industry phases from 2014 to 2024”,

which will occur in the second half of 2023 in a community within the Surat Basin. This session will include narrative findings of the CWB4 project and socioeconomic impacts results of this project.

5) Newsletter and GISERA web: the project will consider the preparation of article for GISERA newsletter and potentially other media outlets as advised by GISERA's communication team. The project proposal, progress reports, presentations and final reporting would be made available on the GISERA website.

With the submission of the scientific paper(s) and completion of the broader communication activities, project completion reports will be submitted to GISERA and ethics.

3. Project Inputs

Resources and collaborations

Researcher	Time Commitment (project as a whole)	Principle area of expertise	Years of experience	Organisation
David Fleming Munoz, Senior research economist, CSIRO L&W	91 days	David is an applied economist with more than 10 years of research experience. He has successfully led research projects in the United States, New Zealand, and Australia. His main research area is applied microeconomics with an emphasis on agricultural and resource economics. His interests also include economic growth, energy futures, regional and development, and public policy. David has published in a range of top economics journals and produced multiple client reports. David will be leading the project and working on all components.	10 +	CSIRO
Simone Felton, Senior research technician, CSIRO L&W	50 days	Simone has more than 15 years of experience in conducting social research of sustainable industry pathways. Including how to measure and manage the social impacts and acceptance of resource industries.	15 +	CSIRO
Lavinia Poruschi, Research economist, CSIRO L&W	60 days	Dr Poruschi is a research economist working on local economic analysis and the impact of primary industry on growth and development. She focuses her research on the energy transitions to renewables and local outcomes, as well as how to measure economic resilience to decarbonisation. She has a background in econometrics, statistical analysis, spatial (GIS) analysis and programming.	5 +	CSIRO

Subcontractors (clause 9.5(a)(i))	Time Commitment (project as a whole)	Principle area of expertise	Years of experience	Organisation
n/a				

Budget Summary

Source of Cash Contributions	2022/23	2023/24	2024/25	2025/26	% of Contribution	Total
GISERA	$100,493	$132,130	$0	$0	80%	$232,623
- Federal Government	$72,857	$95,795	$0	$0	58%	$168,652
- APLNG	$20,099	$26,426	$0	$0	16%	$46,525
- QGC	$7,537	$9,910	$0	$0	6%	$17,447
Total Cash Contributions	**$100,493**	**$132,130**	**$0**	**$0**	**80%**	**$232,623**

Source of In-Kind Contribution	2022/23	2023/24	2024/25	2025/26	% of Contribution	Total
CSIRO	$25,123	$33,033	$0	$0	20%	$58,156
Total In-Kind Contribution	**$25,123**	**$33,033**	**$0**	**$0**	**20%**	**$58,156**

TOTAL PROJECT BUDGET	2022/23	2023/24	2024/25	2025/26	-	TOTAL
All contributions	**$125,616**	**$165,163**	**$0**	**$0**	-	**$290,779**
TOTAL PROJECT BUDGET	**$125,616**	**$165,163**	**$0**	**$0**	-	**$290,779**

4. Communications Plan

Stakeholder	Objective	Channel (e.g., meetings/media/factsheets)	Timeframe
Regional community stakeholders/wider public including land holders and traditional owners.	To communicate project objectives and key messages from the research	A fact sheet at commencement of the project which explains in plain English the objective of the project. Project progress reported and outcomes (e.g., final papers, final factsheets) on GISERA website to ensure transparency for all stakeholders including regional communities. Business and/or community groups (e.g., Toowoomba and Surat Basin Enterprise) invited to community forum to learn of and share their reflections on the findings.	Commencement, Task 1 Ongoing Completion, Task 5
Gas Industry	Industry adopts methods for improving understanding of the social and economic transitions that have occurred over the medium-term throughout Queensland's gas fields. This will enable better response to existing social impacts, and better plan for future developments.	Preliminary communication of findings to key stakeholders. Presentation of findings at joint Gas Industry/Government Knowledge Transfer Session	Task 4 Completion, Task 5
Government	Advice provided to senior bureaucrats / ministers / policy makers	Preliminary communication of findings to key stakeholders. Presentation of findings at joint Gas Industry/Government Knowledge Transfer Session	Task 4 Completion, Task 5
Scientific Community	Expose preliminary and early findings and methods to audiences of experts and scholars knowledgeable of the research topic/methods	Scientific conference	During project, Task 4
Scientific Community	Provide scientific insight into rural transitions due to resource developments, and over time, including insights about changes in impacts from initial boom to medium-term.	Peer-reviewed scientific publication. Dataset(s) available through CSIRO's data repository and/or Journal.	After completion of project, Task 5

In addition to project specific communications activities, CSIRO's GISERA has a broader communications strategy. This strategy incorporates activities such as webinars, roadshows, newsletters and development of other communications products.

5. Project Impact Pathway

Activities	Outputs	Short- term Outcomes	Long- term outcomes	Impact
Tasks 1 to 5	Primary outputs are: - Project factsheets (2), and potentially animated content - Peer reviewed scientific manuscript(s) - Preparation of article for GISERA newsletter and potentially other media outlets - Knowledge Transfer session with Government/Gas Industry - Presentation of findings to local community stakeholders	This research will improve understanding of the medium-term social and economic transitions in Queensland's gas fields. This will better enable communities, industries and government to respond to existing and likely future impacts, both in Queensland's gas fields and resource developments in other regions.	The project will inform Governments, regulators & policymakers on issues regarding policy & legislative framework for the gas industry about social and economic impacts and changes over the medium- term. The project will improve Community's awareness about the economic & social impacts of onshore gas development in Queensland's gas fields, including changes and impacts over the medium-term. The project will improve industry's knowledge and practices related to social & economic opportunities of unconventional gas over the medium-term.	In the long-term, the project will create economic and social impact by being able to inform medium-term decisions about the: - Avoidance of negative impacts experienced - More tailored decisions on infrastructure and investment - Better targeted local and regional capacity building

6. Project Plan

Project Schedule

ID	Activities / Task Title	Task Leader	Scheduled Start	Scheduled Finish	Predecessor
Task 1	Initial project management (e.g., research data plan, initial project factsheet)	David Fleming Munoz	01/02/2023	31/03/2023	
Task 2	Literature review and data collection	Simone Felton	15/02/2023	30/05/2023	Task 1
Task 3	Analysis and drafting of working papers	Lavinia Poruschi	01/06/2023	30/01/2024	Task 2
Task 4	Preliminary communication of findings	David Fleming Munoz	01/10/2023	31/03/2024	Task 2 and 3
Task 5	Communications	David Fleming Munoz and Lavinia Poruschi	Full duration of project		

Task description

Task 1: Initial project management (Ethics, privacy and data management plans, and factsheet)

OVERALL TIMEFRAME: 2 months; 01/02/2023 to 31/03/2023

BACKGROUND: Conducting research within CSIRO's guidelines for data management is important to the overall trust in science, and institutions such as CSIRO and GISERA. In addition, an initial fact sheet showcasing project objectives and goals is important to communicate to and engage with stakeholders.

TASK OBJECTIVES: Data management plan in place, obtain ethics approval and factsheet development

TASK OUTPUTS AND SPECIFIC DELIVERABLES:

1) Initial project factsheet
2) Research data plan
3) Obtain Ethics approval

Task 2: Literature review and data collection

OVERALL TIMEFRAME: 3.5 months; 15/02/2023 to 30/05/2023

BACKGROUND: Although research of the impacts of resource developments on regions and over time, is scarce, it is prudent to ensure any relevant publications, including those that may have cited the impactful publications from the foundation project, are reviewed and used to inform the current research. It is also key to secure relevant data, including from the foundation project (2001 to 2011) and from the ABS for recent periods.

TASK OBJECTIVES:

1) Identify relevant advances and/or gaps in literature and implications for existing project, such as the research design, analysis methods and discussion
2) Compile master data file in suitable format(s) for analyses

TASK OUTPUTS AND SPECIFIC DELIVERABLES:

Literature review and data description report. This report will review scientific literature published since the foundation project, identifying relevant contributions and gaps, and implications for data sourcing, analysis, and discussion. It will also describe the data presenting descriptive statistics and empirical caveats.

Task 3: Draft working paper(s): preliminary analysis and CSIRO review

OVERALL TIMEFRAME: 8 months; 01/06/2023 to 30/01/2024

BACKGROUND: This task will draw on the expertise of the CSIRO science team to identify the most relevant methods of analysis and reporting, including data visualisation techniques. The results will be reviewed and deliberated by the CSIRO research team and CSIRO peer reviewers.

TASK OBJECTIVES: Utilise the most appropriate methods of analysis, data visualisation and reporting, and seek CSIRO peer review.

TASK OUTPUTS AND SPECIFIC DELIVERABLES:

Drafts of scientific working papers based on theme(s) of results and internal CSIRO peer review.

Task 4: Preliminary communication of findings

OVERALL TIMEFRAME: 6 months; 01/10/2023 to 31/03/2024

BACKGROUND: The draft working paper(s) will be shared across select stakeholders to gain further critique in preparation for making the science widely available.

TASK OBJECTIVES: Deliver credible and trustworthy science.

TASK OUTPUTS AND SPECIFIC DELIVERABLES:

Select stakeholders (CSIRO GISERA colleagues, other CSIRO proponents; other key stakeholders; and applied economics conference) informed of findings and leading themes to be reported in scientific papers

Task 5: Communicate project and findings more broadly

OVERALL TIMEFRAME: Full duration of project; 01/02/2023 to 31/03/2024

BACKGROUND: Communications of GISERA research are an important component of outreach and dissemination of findings to diverse audiences.

TASK OBJECTIVES: Communicate project objectives, progress, and findings to stakeholders through meetings, knowledge transfer session, factsheet and working papers, in collaboration with GISERA Communications advisors.

TASK OUTPUTS AND SPECIFIC DELIVERABLES: Communicate project objectives, progress, and results to stakeholders according to standard GISERA project procedures which may include, but not limited to:

1) Submission to scientific journal(s)
2) Factsheet to include results and potentially animated content
3) Knowledge transfer session with Government/Gas Industry

4) Presentation of findings to local community stakeholders
5) Preparation of article for GISERA newsletter and other media outlets
6) Brief project completion report

Project Gantt Chart

	2022-23					2023-24								
Project Tasks	**Feb 2023**	**Mar 2023**	**Apr 2023**	**May 2023**	**Jun 2023**	**July 2023**	**Aug 2023**	**Sept 2023**	**Oct 2023**	**Nov 2023**	**Dec 2023**	**Jan 2024**	**Feb 2024**	**Mar 2024**
1. Initial project management	■	■												
2. Literature review and data collection	■	■	■	■										
3. Draft working paper(s): preliminary analysis and CSIRO review					■	■	■	■	■	■	■	■		
4. Preliminary communication of findings									■	■	■	■	■	■
5. Communicate more broadly	■	■	■	■	■	■	■	■	■	■	■	■	■	■

7. Budget Summary

Expenditure	2022/23	2023/24	2024/25	2025/26	Total
Labour	$119,616	$159,163	$0	$0	$278,779
Operating	$6,000	$6,000	$0	$0	$12,000
Subcontractors	$0	$0	$0	$0	$0
Total Expenditure	**$125,616**	**$165,163**	**$0**	**$0**	**$290,779**

Expenditure per task	2022/23	2023/24	2024/25	2025/26	Total
Task 1	$19,964	$0	$0	$0	$19,964
Task 2	$78,247	$0	$0	$0	$78,247
Task 3	$24,359	$102,761	$0	$0	$127,120
Task 4	$0	$57,707	$0	$0	$57,707
Task 5	$3,046	$4,695	$0	$0	$7,741
Total Expenditure	**$125,616**	**$165,163**	**$0**	**$0**	**$290,779**

Source of Cash Contributions	2022/23	2023/24	2024/25	2025/26	Total
Federal Govt (58%)	$72,857	$95,795	$0	$0	$168,652
APLNG (16%)	$20,099	$26,426	$0	$0	$46,525
QGC (6%)	$7,537	$9,910	$0	$0	$17,447
Total Cash Contributions	**$100,493**	**$132,130**	**$0**	**$0**	**$232,623**

In-Kind Contributions	2022/23	2023/24	2024/25	2025/26	Total
CSIRO (20%)	$25,123	$33,033	$0	$0	$58,156
Total In-Kind Contributions	**$25,123**	**$33,033**	**$0**	**$0**	**$58,156**

	Total funding over all years	Percentage of Total Budget
Federal Government investment	$168,652	58%
APLNG investment	$46,525	16%
QGC investment	$17,447	6%
CSIRO investment	$58,156	20%
Total Expenditure	**$290,779**	**100%**

Task	Milestone Number	Milestone Description	Funded by	Start Date	Delivery Date	Fiscal Year Completed	Payment $ (excluding CSIRO contribution)
Task 1	1.1	Project initial factsheet delivered	GISERA	Feb-23	Mar-23	2022-23	$15,971
Task 2	2.1	Literature review and data description report	GISERA	Feb-23	May-23	2022-23	$62,598
Task 3	3.1	Working paper drafts delivered	GISERA	Jun-23	Jan-24	2023-24	$101,696
Task 4	4.1	Preliminary communication of findings	GISERA	Oct-23	Mar-24	2023-24	$46,166
Task 5	5.1	Communicated more broadly	GISERA	Feb-23	Mar-24	2023-24	$6,193

8. Intellectual Property and Confidentiality

Background IP (clause 11.1, 11.2)	**Party**	**Description of Background IP**	**Restrictions on use (if any)**	**Value**
				$
				$
Ownership of Non-Derivative IP (clause 12.3)	CSIRO			
Confidentiality of Project Results (clause 15.6)	Project Results are no confidential.			
Additional Commercialisation requirements (clause 13.1)	Not Applicable			
Distribution of Commercialisation Income (clause 13.4)	Not applicable			
Commercialisation Interest (clause 13.1)	**Party**		**Commercialisation Interest**	
	CSIRO		N/A	
	APLNG		N/A	
	QGC		N/A	

9. References

Fleming, D. A., & Measham, T. G. (2015). Local economic impacts of an unconventional energy boom: the coal seam gas industry in Australia. *Australian Journal of Agricultural and Resource Economics*, *59*(1), 78-94.

Lacey, J., Carr-Cornish, S., Zhang, A., Eglinton, K., & Moffat, K. (2017). The art and science of community relations: Procedural fairness at Newmont's Waihi Gold operations, New Zealand. *Resources Policy*, 52, 245-254.

Lacey, J., Malakar, Y., McCrea, R., & Moffat, K. (2019). Public perceptions of established and emerging mining technologies in Australia. *Resources Policy*, 62, 125-135.

Lèbre, E., Owen, J.R., Stringer, M., Kemp, D. & Valenta, R.K. (2021). Global scan of disruptions to the mine life cycle: price, ownership, and local impact. *Environmental Science & Technology*, 55(8), 4324-4331.

Measham, T. G., & Fleming, D. A. (2014). Impacts of unconventional gas development on rural community decline. *Journal of Rural Studies*, *36*, 376-385.

Vivoda, V., Kemp, D., & Owen, J. (2019). Regulating the social aspects of mine closure in three Australian states, *Journal of Energy & Natural. Resources Law*, 37(4) 405-424.

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.