



GISERA research in NSW

NSW Government

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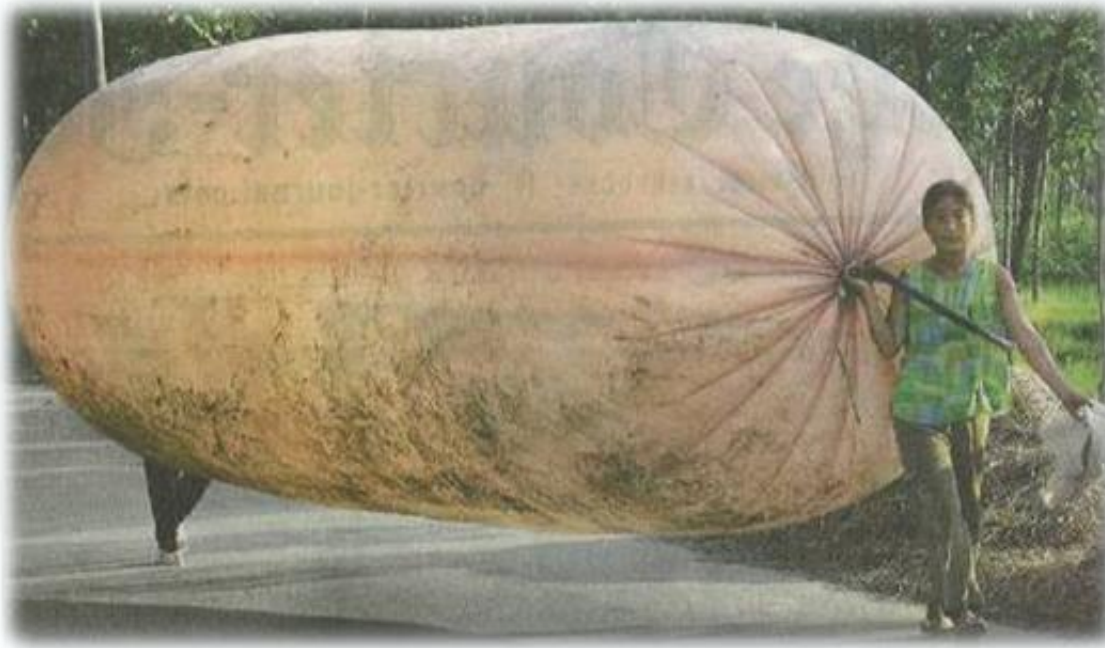
ENERGY BUSINESS UNIT

www.csiro.au



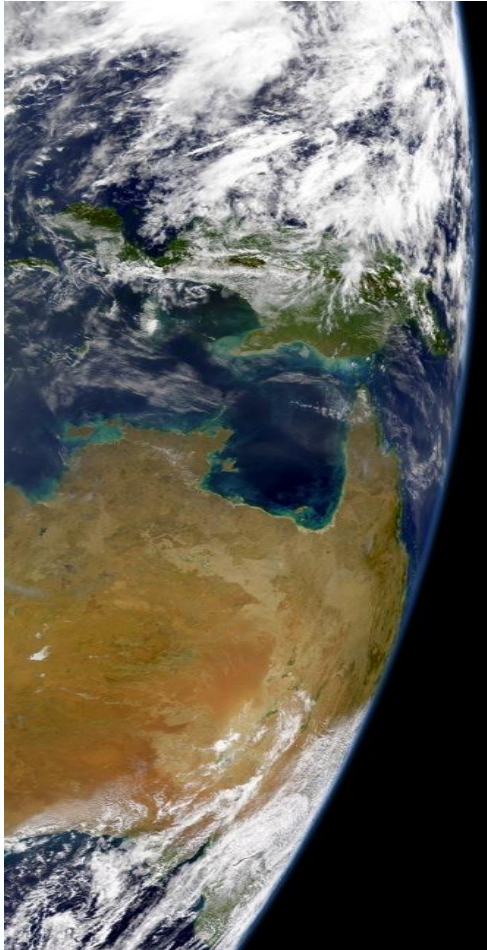
Australian Government
Department of Industry,
Innovation and Science

Global energy demand



- 502,960 PJ
- 17,360 PJ
- 5,772 PJ
- Gas 21% Aust. energy needs
- Largest gas exporter
- (Largest coal exporter)
- ~50% < GHGs

Australian onshore gas



\$6 - \$16/GJ

- Domestic gas price increase (2017)

\$16.4b

- LNG export revenue (2014)

\$40b

- Revenue locked-up in NSW (SLO)

50%

- Community 'tolerate' gas operations

$\frac{3}{4}$

- Companies have slowed/halted innovation spending¹

$\frac{1}{2}$

- Companies believe innovation spending important¹

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- Domestic gas contracts beyond 2017

GISERA

- CSG: Challenges & opportunities
 - Not distributed evenly in space & time or among stakeholders
 - Uncertainty creates tension and public discontent
 - Science to improve predictions of distribution of challenges & opportunities
 - Inform decision making, inject information into debate & reduce tension
- GISERA seeks to develop
 - Integrated, regional, systems-based research portfolio
 - Provide gas industry/community evidence based knowledge
 - Underpin decision making to maximize benefits & minimize costs
- Benefits
 - New knowledge & reduced uncertainties for relevant stakeholders
 - Foster collaboration by industry, communities, government, universities
 - Synthesize data & knowledge at a regional scale
 - Provide non-exclusive & mutual leverage opportunities
- CSIRO – APLNG – QGC – Santos – Origin Energy – AGL
 - Seeking multilateral collaborative links

Key environmental & social questions



- Does CSG affect quality/quantity of water?
- What are impacts on farm production, productivity and amenity?
- What is CSG contributing to regional greenhouse gas & global climate change?
- What are costs/benefits for communities?
- What are impacts on regional flora/fauna?
- Does CSG development make people sick or affect ecosystems?
- Decommissioning issues?

GISERA's research portfolio

- **Agriculture:** identifying landscape/development configurations that maximise co-benefits
- **Water:** understanding risks associated with extraction & use of groundwater
- **Biodiversity:** understanding & minimising impacts of development on regional ecological function
- **Marine:** understanding vulnerable components of the marine ecosystem to minimise or offset impacts
- **Socio-economic:** informing & supporting change to enhance regional & community benefit
- **Greenhouse footprint:** identifying sources and profiling the region
- **Health:** understanding exposure pathways and associated risks

GISERA governance

Members of the NSW RRAC

40%

Professor Alison Sheridan – Head of School of Business, University of New England

Mr Jack Warnock – Lower Namoi Cotton Growers' Association and Managing Director, Warnock Agronomics Pty Ltd

Mr Ken Flower – General Manager, North West Local Land Services

Mrs Annette Turner – President, Country Women's Association of NSW



INDEPENDENT

20%

Neale House – Manager, Environment and Water, Santos

Mr Aaron Clifton – NSW Environment Manager, Gas Operations, AGL



INDUSTRY

20%

Dr Peter Wallbrink – Research Director – Basin Management Outcomes, Land and Water, CSIRO

Dr Michael Braunaack – Research Team Leader, Agriculture, CSIRO



CSIRO

20%

Mr Jock Laurie – NSW Land and Water Commissioner, NSW Department of Industry

Dr Philip Wright – Chief Scientific Officer, NSW Department of Primary Industries



GOVERNMENT

- GISERA NSW Research Advisory Committee
 - Contains 2/10 industry members
 - Can identify, develop, approve or stop projects
 - Ensures research priorities are independent
 - Ensure research is transparent
 - Oversees conduct
 - Internal documentation completely visible (www.gisera.org.au)
 - Reports publicly available following CSIRO peer-review
- GISERA Research Management Committee
 - Composition: CSIRO, APLNG, QGC
 - Oversees day-to-day operations
 - Financial governance
 - Milestone sign-off

NSW GISERA total budget

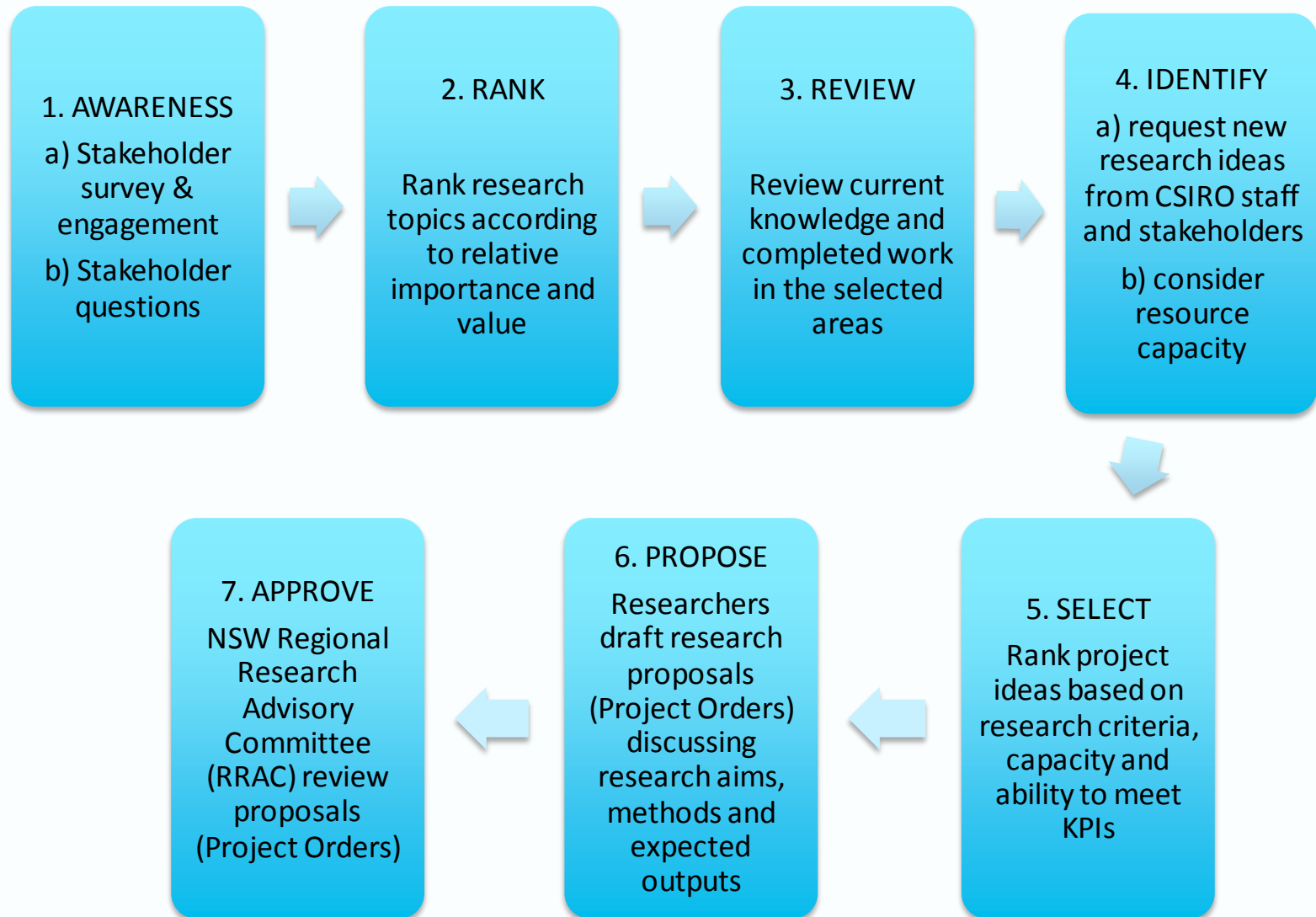
Group	Contributor	Payment type	GISERA – NSW
Industry		Membership	\$900,000
Government	Federal Government	Grant	\$1,500,000
	NSW Government	Grant	\$1,500,000
CSIRO	CSIRO	In-kind	\$1,500,000
TOTAL (from 2016-2018)			\$5,400,000

Constructing the NSW research portfolio

Projects approved

THEME	TOPIC
Water	Impacts of CSG depressurization on Great Artesian Basin flux: conceptual model refinement, uncertainty analysis and hypothesis testing
Greenhouse	Regional Methane Emissions in NSW CSG Basins
Economic	Analysing economic and demographic trajectories in NSW regions experiencing CSG development
Social	Social baseline assessment of the Narrabri region of NSW in relation to CSG development

Constructing the NSW research portfolio



Constructing the NSW research portfolio

Projects in review

Subject Area	Title
Groundwater	Assessment of water quality risk to farmers' bores and spatial design of groundwater monitoring networks for early detection of groundwater quality impacts in the Narrabri Gas Project area
Groundwater	Improving the representation of the impact of coal seam gas extraction in groundwater flow models for the Namoi region
Groundwater	Water contamination risk assessment tool for borehole delamination and hydraulic fracturing activity in unconventional gas extraction
Agricultural	Landscape values in the Namoi
Decommissioning	Decommissioning Pathways for CSG Projects
Social	Building a Learning Community
Economic	Using gas to meet NSW energy needs and GHG targets
Health	Health effects of Coal Seam Gas Activity: Review and Study Design

Thank you

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