Resources Policy 50 (2016) 253–263

Contents lists available at ScienceDirect

Resources Policy

journal homepage: www.elsevier.com/locate/resourpol

A tale of two states: Development and regulation of coal bed methane extraction in Queensland and New South Wales, Australia

Ian Cronshaw[a], R. Quentin Grafton[a,b,*]

[a] The Australian National University, Australia
[b] National University of Singapore, Singapore

ARTICLE INFO

Keywords:
Social licence
Unconventional gas
Coal-seam gas
LNG

ABSTRACT

The paper reviews coal bed methane developments and their regulation in the states of Queensland and New South Wales, Australia. Queensland, like Pennsylvania in terms of shale gas developments in the US, has adopted a 'go grow' and a learning-by-doing approach to gas extraction. In Queensland, this approach has supported the rapid development of coal-bed methane as an energy source for domestic use, and since 2014, for export markets. By contrast, New South Wales has adopted a 'go slow' approach akin to that followed by New York State in terms of shale gas, but for coal-bed methane extraction. The different pathways followed by the two states allows for a comparison of regulatory change, why regulations have differed, and their benefits and costs. Differences are explained by: (1) the dynamic and fragile nature of a 'social licence'; (2) the nature of the local concerns in the two states; and (3) how and why individuals and communities might support resource developments that impose environmental and other risks. Overall, the study offers a guide as to how and why resource policies have developed differently in neighbouring.

1. Introduction

Eastern Australia has witnessed a dramatic transformation in its gas industry over the past decade. Much of this development has involved unconventional gas (UCG) production which has accessed coal-bed methane (CBM), also known as coal-seam gas, from the Surat and Bowen Basins in south-eastern Queensland although substantial gas reserves are also located in the Gunnedah Basin in New South Wales (see Fig. 1). Unlike shale gas, CBM is typically extracted by dewatering coal seams, but hydraulic fracturing may be required for deeper coal beds and also to enhance gas production after dewatering in shallow coal seams (DMITRE, 2012).

CBM extraction has been practised for over a century, but the first modern commercial production and sale in Australia began in 1996 in Queensland. Early CBM development was supported by the Queensland Gas Scheme that was initiated in 2005, but was discontinued at the end of 2013. This scheme mandated a fixed proportion of gas (15% as of 2012) as a fuel source for electricity generation in the state (BREE, 2014). As a direct result of the Queensland Gas Scheme, CBM developments, including exploration, grew rapidly such that the number of CBM wells drilled per year quadruped between 2004–2005 and 2008–2009.

In 2010 there was a final investment decision to proceed with the construction of an export liquefaction facility on Curtis Island, near Gladstone, Queensland which was subsequently followed by final investment decisions for two other plants, on adjacent sites on Curtis Island. The planned supply of gas for all these plants is from CBM, but to make up for a shortfall in CBM supply, conventional gas from the Cooper Basin has also been contracted to help meet supply contracts. By the end of 2015 all three plants had commenced operations and had exported gas in the form of liquefied natural gas (LNG). The need to supply these LNG facilities doubled the number of CBM wells drilled between 2008-09 and 2013-14 (Office of the Chief Economist, 2015). As a result of these developments, the proportion of gas produced in Queensland from CBM increased from just 3% in the 1998-99 to 92% in 2014-15. This represented a more than a 100 fold increase in the state's annual CBM production in less than 20 years (Queensland Department of Natural Resources and Mines, 2016).

The huge increase in CBM production in Queensland and its 'go grow' approach with 'learning by doing' directly contrasts to the lack of development in the state of New South Wales (NSW) and its 'go slow' approach. The NSW approach has not arisen because there are not prospective CBM fields available in the state, nor because CBM is prohibited because the state has had an operational CBM gas field at Camden, near Sydney, since 2001. Instead, the 'go slow' approach has been a response to ensuring the risks of CBM are adequately managed.

* Correspondence to: The Crawford School of Public Policy, Building 132, Lennox Crossing, The Australian National University, Canberra, ACT 2601, Australia.
E-mail address: quentin.grafton@anu.edu.au (R. Quentin Grafton).

http://dx.doi.org/10.1016/j.resourpol.2016.10.007
Received 22 April 2016; Received in revised form 9 October 2016; Accepted 10 October 2016
Available online 25 October 2016
0301-4207/

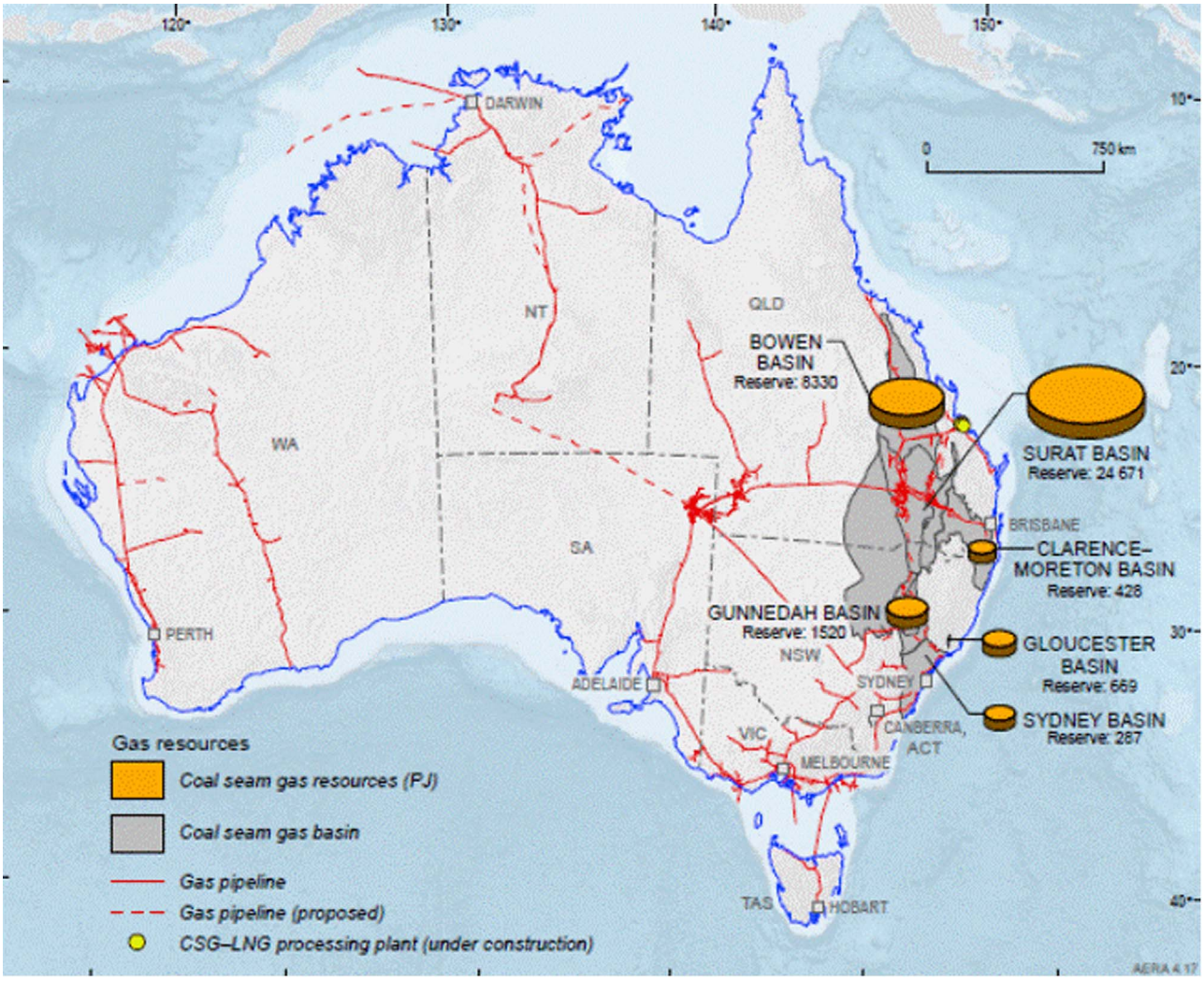

Fig. 1. Location of coal-bed methane basins in Australia.
Source: Australian Energy Resource Assessment, Second Edition (2014), Figure 2.14

Critically, in key parts of NSW, unlike Queensland, there has been a lack of a 'social licence' to either explore for or extract CBM.

The comparison between the two jurisdictions is a tale of two states. Both share the same property rights structure whereby sub-surface rights are retained by the Crown or the state and are separate from and dominant to the surface rights of landholders, but vary in terms of the history of gas extraction and regulatory paths adopted by different states (Productivity Commission, chapter 5, 2013). The contrasting developments in the two states provides important insights about two alternative ways to regulate UCG in Australia, and elsewhere.

In section two, we review the economic, social and environmental effects of CBM developments, in section three we outline the chronology of gas development and regulation in Queensland while in section four we provide the chronology for NSW. In section five we provide a policy discussion and insights that highlights three key factors: (1) the dynamic and fragile nature of a 'social licence'; (2) differences in local concerns in the two states; and (3) how and why communities might support resource developments despite environmental and other risks. We offer concluding remarks in Section 6.

2. Social, economic and environmental effects of CBM developments

The enormous increase in CBM gas production in Queensland is highlighted in Fig. 2 with peak production likely to occur in the 2020s

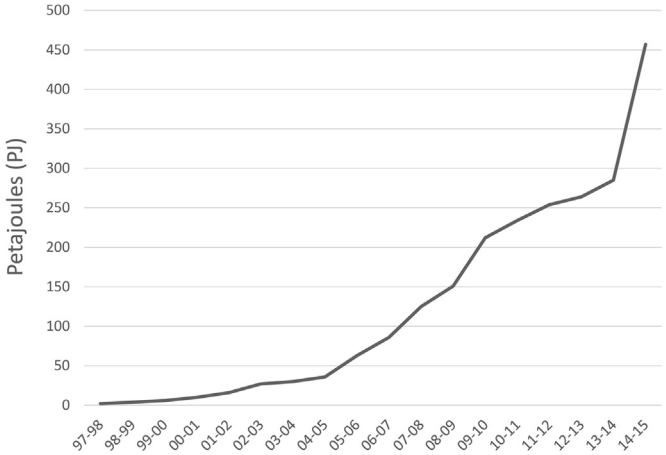

Fig. 2. Coal bed methane production in Queensland 1997-98 to 2014-15 (PJ).

(Towler et al., 2016) at about four times 2014-15 levels of output. Overall, production increased from some 2 PJ in 1997-98 to about 460 PJ in 2014-15.[1] By contrast, the sole CBM production in NSW is from

[1] PJ = petajoule or 10^{15} ×1.0J and 1 PJ =10^{6} ×1.0 Gigajoule (GJ). Gas can be measured in terms of energy content (PJ) or volume (billion cubic metres or billion cubic