# 7 Pre-competitive geoscience information

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| Key points |
| * Pre‑competitive geoscience information is generated from early stage, broad area geological surveying and analysis of the resulting data. The information is made available to private explorers to target prospective mineral and petroleum deposits. * The case for public funding of pre‑competitive geoscience information is widely accepted on the grounds of partial public good characteristics, primarily that the use of the information by one explorer does not prevent its use by others. Public provision of such information can also be considered analogous to the information required to prepare a prospectus to maximise the value of selling a community‑owned asset (in this case Australia’s mineral and energy resources). * Australia’s pre‑competitive geoscience information is highly regarded by domestic and international explorers. It is not viewed as a barrier to resource exploration, but rather as an asset that encourages exploration investment in Australia. * Comprehensive reform of Australia’s pre‑competitive geoscience information arrangements is not required. However, there may be opportunities to improve the funding of Australia’s geoscience agencies and the coverage of Australia’s geological database. * The movement towards a cost recovery framework in New South Wales provides an opportunity for other jurisdictions to assess the costs and benefits of this model. * The Commission notes the increasing use of initiative funding to finance pre‑competitive geoscience information collection and is seeking feedback from stakeholders as to whether this represents a more effective and efficient way to finance geoscience activities compared to a more stable long term funding base. * Extending the public collection of data to those exploration companies which do not currently report publically on their mineral and energy reserves would address current gaps in the resource reserve information base and hence improve the attractiveness of Australia as an exploration destination. * The Exploration Investment and Geoscience Working Group of the Standing Council of Minerals and Resources is currently exploring policy options to address this. |
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This chapter examines the government provision of pre‑competitive geoscience information in Australia. It examines why and how governments are involved in delivering pre‑competitive geoscience information, assesses the quality of Australia’s geoscience database and explores some possibilities for improvement in Australia’s pre‑competitive geoscience information provision.

## 7.1 Government involvement in pre‑competitive information

#### Why are governments involved in geoscience information?

Pre‑competitive geoscience information involves the collection and analysis of geological data about the Earth’s surface to inform decisions about the likely prospectivity of resource deposits. It involves the reconnaissance of broad areas to define the geology of a region, rather than to locate specific mineral and resource deposits.

Government involvement in the provision of pre‑competitive information is typically justified because it possesses some attributes of a public good. The key attribute in this case is that, unlike most goods and services, pre‑competitive information can be used by one explorer without preventing the use of the same information by another explorer. This means that pre‑competitive information is *non‑rivalrous* in its use.

Government involvement in the provision of pre‑competitive geoscientific information may also be attributed to other purposes. Geoscience Australia (GA) argued that geoscientific information assists with the planning and management of community‑owned resources:

GA provides geoscientific information and knowledge to enable the government and the community to make informed decisions on the economic, social and environmental management and exploration of the nation’s natural resources. (sub. 6, p. 1)

Duke (2010) further justifies government involvement in geoscience by citing the effects it has on risk, costs and therefore investment attractiveness:

[public geoscience] attracts exploration investment by allowing industry to identify areas of favourable mineral potential. It increases exploration efficiency by making it unnecessary for individual companies to duplicate common information, or spend money on non‑prospective ground. It increases exploration effectiveness by providing key information inputs to risk‑based decision‑making. By reducing exploration costs and risk, public geoscience not only improves returns on private investment but also increases revenues accruing to governments as royalties and taxes. (p. 28)

#### How are governments involved in geoscience information

The responsibility of collecting geoscience information is shared between the Australian and the State and Territory Governments. Each State and Territory, except the ACT, has their own geological survey organisation, and these are responsible for collecting *onshore* pre‑competitive geoscience information.

GA, a Commonwealth agency, has prime responsibility for *offshore* pre‑competitive information and mapping activities. It also conducts applied research and provides data, information and services to a wide range of government agencies, industry and international partners.

GA stores data, information and the physical samples generated by exploration companies through drilling and exploring offshore basins. GA also formally collaborates with its jurisdictional counterparts under the National Geoscience Agreement in gathering and assessing onshore geoscientific data (at national and regional scale).

In addition to collecting and disseminating geological data, governments also implement geoscience initiatives that aim to encourage private exploration activity within their jurisdiction. These initiatives have included co‑funding drilling and facilitating the transfer of exploration technology.

Pre‑competitive geoscience information is largely provided to explorers free of charge. The exception to this is New South Wales, which has recently moved towards full cost recovery charging. This issue is considered later in the chapter.

## 7.2 The quality of Australia’s geological database

Around 80 per cent of the Australian continent is currently mapped by high resolution magnetic data while about 60 per cent is covered by radiometric data. Gravity datasets are available at reconnaissance scale (1:250 000) over most of the continent. Offshore oil, gas and condensate basins remain largely uncharted and are comparatively under‑explored despite being estimated to hold more than 90 per cent of Australia’s known oil and condensate reserve (ACIL Tasman 2010, 2011).

Australia’s geological mapping is less detailed than in many other APEC economies (table 7.1). Many APEC economies provide maps at twice the resolution of those available in Australia while in several countries, including the United States, maps are at least four times more detailed.

Table 7.1 Availability of geological information ‑ APEC economies

Yes No Not indicated

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Country | Restrictions on who can access data | Data is available online | Data is available free of charge | Smallest scale at which data available | Name of agency |
| Australia |  |  |  | 1:100 000 | Geoscience Australia, various state and territory geological survey agencies |
| Brunei Darussalam |  |  |  | 1:1 000 | Survey Department |
| Canada |  |  |  | 1:50 000 | Geological Survey of Canada, various provincial agencies |
| Chile |  |  |  | 1:50 000 | Sevicio Nacional de Geologia y Mineria (Sernageomin) |
| China |  |  |  | 1:50 000 | China Geological Survey |
| Chinese Taipei |  |  |  | 1:25 000 | Central Geological Survey |
| Hong Kong, China |  |  |  | 1:5 000 | Hong Kong Geological Survey Section, Civil Engineering and Development Department |
| Indonesia |  |  |  | 1:100 000 | Geological Agency |
| Japan |  |  |  | not indicated | Geological Survey of Japan |
| Malaysia |  |  |  | not indicated | Minerals and Geoscience Department |
| Mexico |  |  |  | 1:50 000 | Servicio Geológico Mexicano (Mexican Geological Survey) |
| New Zealand |  |  |  | 1:50 000 | Institute of Geological and Nuclear Science |
| Papua New Guinea |  |  |  | 1:250 000 | Mineral Resource Authority, Geological Survey of Papua New Guinea |
| Peru |  |  |  | 1:100 000 | Instituto Geologica Mineroy Metalurgicc ‑ INGEMMET (Geological, Mining and Metallurgical Institute) |
| Philippines |  |  |  | 1:50 000 | Mines and Geoscience Bureau |
| Republic of Korea |  |  |  | 1:50 000 | Korea Institute of Geology, Mining and Materialsa |
| Russian Federation |  |  |  | not indicated | Institute of Geology |
| Singapore |  |  |  | not applicable | No applicable body |
| Thailand |  |  |  | 1:50 000 | Department of Mineral Resources |
| United States |  |  |  | 1:24 000 | United States Geological Survey |
| Viet Nam |  |  |  | 1:50 000 | Department of Geology and Minerals of Vietnam |

a KIGAM handles pure geological information. Information relating to the location of mineral and petroleum resources is managed by the Korea Resources Corporation (Korea).

*Source*: Penney et al. (2007).

Despite this, Australia’s geological databases are generally considered to be of high and improving quality. The results of the Fraser Institute international *Survey of Mining Companies 2012/2013*, often quoted by industry, point to Australia’s geological databases as being among the best in the world (table 7.2, left hand panel). In the latest edition of the Institute’s mining survey, which ranked 62 national or subnational jurisdictions, the highest proportion of respondents identified the quality of South Australia’s geological information as ‘encouraging investment’. Western Australia (third), the Northern Territory (sixth) and Queensland (ninth) also ranked highly.

Australia also performs well in the Institute’s equivalent petroleum survey (2012). Out of the 147 jurisdictions surveyed, South Australia, offshore Australia and Western Australia had the highest proportion of respondents who identified that the quality of geological information was encouraging investment in these jurisdictions (table 7.2, right hand panel).

Submissions to this inquiry similarly praised the quality of Australia’s pre‑competitive geoscience information. For example, the Australian Institute of Mining and Metallurgy (AusIMM) stated:

AusIMM members are of the view that Australia’s various geoscience organisations produce very high quality pre‑competitive data, and play a very constructive role in supporting minerals exploration investment. (sub. 12, p. 2)

Likewise, an industry participant to the South Australia Chamber of Minerals and Energy submission commented:

I think delivery of Geoscientific information is pretty good by both federal and state bodies. The govt needs to understand (and I think it does) that the mature exploration environment in Australia means that the search for new deposits is much harder and much more expensive these days. (sub. 9, p. 13)

The Minerals Council of Australia, while warning that Australia should not rest on past achievements, noted that:

World‑leading exploration geoscience has been a key competitive advantage of Australia’s exploration sector and emerging mining regions are moving quickly to emulate this success. (sub. 27, p. 32)

Table 7.2 Quality of the geological database: the highly ranked and selected other jurisdictions

Per cent of firms reporting that the available database encourages investment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Region | Survey of Mining Companies | | | Global Petroleum Survey | | |
|  | *2004‑05* | *2008‑09* | *2012‑13* | *2007* | *2010* | *2012* |
| ***Australia*** |  |  |  |  |  |  |
| South Australia | 48 | 75 | 81 | na | 55 | 81 |
| Western Australia | 37 | 59 | 74 | na | 64 | 74 |
| Northern Territory | 38 | 64 | 67 | na | 67 | 54 |
| Queensland | 42 | 59 | 63 | na | 47 | 36 |
| New South Wales | 35 | 64 | 60 | na | 20 | 42 |
| Victoria | 38 | 61 | 58 | na | 55 | 46 |
| Tasmania | 0 | 60 | 48 | na | 29 | 27 |
| Offshore ‑ Australia |  |  |  | 53a | 59 | 79 |
| ***Canada*** |  |  |  |  |  |  |
| Quebec | 61 | 81 | 76 | na | 13 | 8 |
| Ontario | 55 | 66 | 71 | na | 25 | na |
| British Columbia | 66 | 63 | 69 | 43 | 65 | 62 |
| New Foundland and Labrador | 46 | 71 | 66 | 63 | 17 | 15 |
| ***United States*** |  |  |  |  |  |  |
| Nevada | 40 | 53 | 57 | na | na | na |
| Alaska | 16 | 43 | 56 | 67 | 58 | 47 |
| Utah | 22 | 41 | 56 | na | 58 | 44 |
| Montana | 23 | 35 | 55 | 40 | 31 | 36 |
| Offshore ‑ Gulf of Mexico | na | na | na | na | 63 | 55 |
| Offshore ‑ Alaska | na | na | na | na | 36 | 33 |
| ***Eurasia*** |  |  |  |  |  |  |
| Mongolia | 0 | 22 | 6 | na | na | na |
| China | 0 | 4 | 0 | 0 | 15 | 8 |
| Russia | 0 | 32 | 12 | 7 | 0 | 0 |
| ***Middle East*** |  |  |  |  |  |  |
| Kuwait | na | na | na | 60 | 5 | 44 |
| Qatar | na | na | na | 29 | 23 | 33 |
| ***Africa*** |  |  |  |  |  |  |
| Namibia | na | 35 | 30 | na | 33 | 0 |
| South Africa | 21 | 34 | 22 | na | 24 | 10 |
| Botswana | 8 | 32 | 21 | na | na | na |
| ***Latin America*** |  |  |  |  |  |  |
| Mexico | 7 | 22 | 28 | see United States above | | |
| Chile | 25 | 38 | 25 | na | 0 | 29 |
| Peru | 24 | 27 | 24 | 38 | 20 | 21 |
| Brazil | 4 | 17 | 13 | 36 | 14 | 27b |

a Scores for individual states and territories were not recorded for this year. b Overall score for Brazil not recorded for this year, this score applies only to offshore concession contracts.

*Sources*: Angevine and Cameron (2007); Angevine and Cervantes (2010); Angevine et al. (2010); McMahon (2005); McMahon and Cervantes (2009); Wilson et al. (2013).

Broadly positive opinions on Australia’s pre‑competitive geoscience information were also expressed in submissions from the Australian Petroleum Production and Exploration Association (APPEA) (sub. 22) and the Association of Mining and Exploration Companies (AMEC) (sub. 24). Recent reviews by the Policy Transition Group (PTG 2010) and the Australian National Audit Office (ANAO 2010) similarly confirm industry satisfaction with Australia’s geological database.

This is not to say that submissions did not express concerns about current geoscience arrangements. For example, AusIMM (sub. 12) suggested that governments in Australia may be underinvesting in geoscience information and that this may be restricting greenfield exploration investment while APPEA (sub. 22) noted that coverage in some jurisdictions is patchy.

Based on the available evidence, the Commission concludes that comprehensive and wide ranging reforms of Australia’s current geoscience arrangements are not required. That said, there are opportunities to pursue more focused reforms with a view to improving geoscience funding arrangements, governance and the coverage of Australia’s geological database. These matters are explored below.

## 7.3 Opportunities to improve pre‑competitive geoscience information

The proportion of GA’s funding secured from base (block) funding has fallen in recent years (figure 7.1). In 2002‑03, over 80 per cent of GA’s resources were from base funding. This fell to 52 per cent by 2009‑10, as program specific and Section 31 funding methods gained in prominence[[1]](#footnote-1).

Figure 7.1 Funding composition of Geoscience Australia

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*Data source*: DoFD (2011).

While a similar breakdown for state‑level geoscience agencies is not available, a survey of geoscience initiatives across jurisdictions (table 7.3) shows that the use of initiative programs to fund pre‑competitive geoscience activities is widespread. This raises questions as to whether the increasing prominence of initiative funding represents the optimal means to finance the collection and provision of pre‑competitive geoscience information.

Block funding offers a number of advantages over initiative funding arrangements for agencies such as GA and the State/Territory geological surveys. As the Commission argued in its report on *Public Support for Science and Innovation*, block funding:

* provides greater flexibility to make strategic decisions about research directions
* creates opportunities to respond to emerging priorities
* allows organisations to plan and build multi‑disciplinary resource capability
* provides scope to engage in larger‑scale, longer‑term activities
* involves lower administrative and compliance costs compared to grant or program‑specific funding (PC 2007).

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) — like Australia’s geological surveys — undertake research that may be built upon by the private sector. The CSIRO noted in its submission to the Commission’s inquiry into *Public Support for Science and Innovation*:

The budget appropriation … provides for a degree of certainty and stability. This facilitates the strategic planning of research and investment in longer term, challenging projects, as well as the maintenance of capability. Appropriation funding supports basic infrastructure, including facilities, equipment and expertise. Just as importantly, it provides an essential base from which it becomes possible to invest resources into the development of long term research projects requiring the assembly of large teams of experts from several disciplines across different organisations. Grant schemes do not support such planning or cover the considerable overheads required to manage such projects. Neither do grant schemes provide the single point accountability within one organisation which is necessary for the effective management of this kind of large scale program. (PC 2007, p. 481)

A specific example of the type of activity that is not suited to short‑term funding arrangements is the role played by Australia’s geological surveys in maintaining and updating databases of geoscientific information accumulated over the last 100 years. In that regard, geological and geospatial data has a long life cycle, primarily because of the requirement for time series continuity in certain fields but also because the development of new techniques and technology for data analysis and interpretation mean existing data can be continuously reinterpreted to provide new insights (PWC 2009).

Updating collections to a form more easily accessed and analysed is also an ongoing requirement as the data needs of explorers and other stakeholders change over time (such as through a move away from physical to electronic data). Hence, the costs associated with custodial and stewardship activities associated with database management are ongoing.

But there are also potential disadvantages associated with block funding including reduced external accountability (with initiative funding often tied to outcome‑focused performance reporting requirements), less direct involvement in funding investment decisions by stakeholders and lower incentives to maintain or improve performance compared with more at risk, shorter, fixed‑term funding sources.

Table 7.3 Geoscientific initiatives across jurisdictions

| Jurisdiction | Initiative Name | Start date | Timeframe | Funding | Key features |
| --- | --- | --- | --- | --- | --- |
| Commonwealth | Energy Security Program | 2006 | 5 years | $134 million | * $58.9 million for onshore seismic surveying, radiometric mapping and geochemical surveying * $75.1 million for offshore surveys, prospectivity assessments and information management |
| Western Australia | Exploration Incentive Scheme (EIS) Phase 1 | 2009 | 5 years | $80 million | * $1.5 million for online application processes * $26.9 million for innovative drilling in greenfield areas * $32.5 million for geophysical and geochemical surveys * $13.8 million for an online geological mapping system * $2.3 million for strategic research * $3 million for Indigenous and environmental approval initiatives |
|  | Exploration Incentive Scheme (EIS) Phase 2 | 2014 | 2 years | $37.5 million | Funding to be continued along similar lines to the first phase of the Exploration Incentive Scheme.a |
| Queensland | Smart Mining ‑ Future Prosperity | 2006 | 4 years | $29.1 million | Funding was used to increase and accelerate investment in exploration, address skills shortages, and promote the involvement of women in mining. |
|  | Greenfields 2020 | 2010 | 4 years | $18 million | Funding to be delivered through 8 programs, including collaborative drilling grants, geological mapping and the modernisation of data delivery and management. |
| New South Wales | Exploration NSW | 2000 | 7 years | $30 million | * $12 million for mineral and mapping program * $9.6 million to petroleum programs * $8.4 million to computer based data delivery, data maintenance and online systems |
|  | New Frontiers Initiative | 2006 | 6 years | $30 million | Expenditure breakdown similar to Exploration NSW but varying according to priorities. Extended in 2010‑11 with the implementation of cost recovery funding. |
| South Australia | Plan for Accelerating Exploration (PACE) | 2004 | 10 years | $53.9 million | Funding is distributed through four main work streams:   * PACE Exploration * PACE Mining * PACE Energy * PACE Global |
| Northern Territory | Bringing Forward Discovery | 2007 | 4 years | $14.4 million | * $11.25 million for geoscientific data * $0.75 million for promotion * $2.4 million for co‑funding greenfields exploration |
|  | Bringing Forward Discovery (extension) | 2011 | 3 years | $11.4 million | Extension of original program, continuing original program elements |
| Tasmania | TasExplore | 2006 | 4 years | $5 million | * Acquisition of survey data * Upgrading the 3D model of Tasmania * Promotion of exploration opportunities |
| Victoria | Rediscover Victoria | 2007 | 4 years | $5 million | * $2.5 million to a strategic drilling project * $2.5 million to develop a 3D geological model of Victoria |

a Figures announced in the 2012‑13 state budget but the exact details have not been finalised.

*Sources*:Department of Infrastructure, Energy and Resources Tasmania (2013); Geoscience Australia (2011b); Government of South Australia (2012); NSW DTI (pers. Comm. 8 May 2013); Queensland Department of Natural Resources and Mines (pers. comm. 16 May 2013); Queensland Government (n.d.); Scrimgeour (2011); SA DIMTRE (pers. comm 10 May 2013); Government of Victoria (2011a).

The report by the Policy Transition Group on Minerals and Petroleum Exploration (PTG) commented indirectly on the desirability of moving back to a greater reliance on block funding, saying:

The Policy Transition Group recommends that the Australian Government should provide for a more sustainable stream of funding for Geoscience Australia to acquire and make available pre‑competitive geoscience and geospatial data, and manage publicly and privately acquired data through its national data repository. (2010, p. 23)

In assessing the impact of current funding arrangements on GA’s ability to provide pre‑competitive data, PriceWaterhouseCoopers (PWC 2009) also supported baseline (block) funding:

In order to continue to deliver these outputs and to allow the geoscientific activities to be planned and undertaken in the most effective manner a structural change to the manner in which Geoscience Australia is funded is required, this involves:

* Having appropriations provided on an ongoing basis (rather than through a series of lapsing programs);
* Funding for the core capabilities required to deliver Section 31 funded projects to be directly appropriated; and,
* Funding explicitly for two key functions for which Geoscience Australia has never received on‑going funding for, namely the acquisition of precompetitive data for the resources sector and for Geoscience Australia’s role as the custodian of Australia’s legacy of geoscience and geospatial data, including associated stewardship. (p. 4)

PWC went on to say:

The lack of funding certainty for these activities (in the form of baseline funding) presents a number of challenges for GA, including a lack of longer term planning, which would ensure GA has the personnel required to undertake such activities as well as prioritisation of such activities, allowing GA to play a more proactive role in the most effective data to acquire (rather than only reacting to requests from outside agencies). (p. 28)

The Commission considers that there is a strong in‑principle case for a large proportion of the funding for Australia’s geological surveys to be secured through ongoing block appropriations. However, there is a lack of information — particularly at a State and Territory level — as to what extent their geological surveys are already funded this way, compared to their level of reliance on other sources of revenue.

As such, the Commission is seeking information from stakeholders on the funding composition of Australia’s geological surveys and whether this represents the optimal way to fund pre‑competitive geoscience information.

INFORMATION REQUEST

The Commission is seeking information on the current proportion of funding for Australia’s geological agencies that is sourced from ongoing block appropriation. The Commission is also seeking views from stakeholders as to whether the current funding arrangements of Australia’s geological surveys represent the optimal way to finance the collection and provision of pre‑competitive geoscience information.

### Exploring cost recovery pricing models

As discussed in section 7.1, pre‑competitive geoscience information is a partial public good in the sense that it is *non‑rivalrous* in use. However, geoscience information is not a pure public good because explorers can be *excluded* from accessing that information. This feature raises the prospect of public provision combined with cost recovery charging.

Arguments for full or partial cost recovery of pre‑competitive geoscience information can be made in terms of both user pays principles, as discussed below, and the ‘price’ signals that cost recovery user charging would potentially send to government about the appropriate level of pre‑competitive information provision. The ability to fully or partially recover the costs of generating the information is an indication of the value that private explorers place on the level and quality of information being provided.

The case for user charging was recently analysed and conditionally dismissed by the Department of Finance and Deregulation (2011). DoFD noted that it was in the government’s and the community’s interests to fund pre‑competitive information in order to attract the largest possible competitive field of potential investors. This process, it was argued, was analogous to the due diligence that companies undertake in preparing an investment prospectus (or product disclosure statement) for the sale of a business or asset (DoFD 2011). Further:

The ‘prospectus’ analogy represents a departure from the public good argument that is typically used to justify government provision of pre‑competitive information. While public good attributes certainly apply to pre‑competitive information, under this model it is the Government’s desire to maximise its private interests, as sovereign owner of resources and recipient of secondary tax revenues from resource development, that forms the core business case for the Government to generate and provide pre‑competitive information as described above. *This business case is heavily dependent on the current system for allocating exploration acreage which generally does not assign exploration rights at a scale where strategic regional framework studies become viable for private investors.* [emphasis added] (DoFD 2011, p. 39)

DoFD argued that cost recovery could reduce the number of potential competitors for exploration licenses. This would be particularly relevant for smaller specialist explorers that typically show the greatest interest in frontier or greenfield exploration areas that governments specifically target for exploration investment.

The Commission notes that, in contrast to the DoFD position, New South Wales has recently moved to a user‑pays system to fully recover the cost of providing pre‑competitive information. In outlining the new funding model, the New South Wales Department of Trade and Investment, Regional Infrastructure and Services said the New Frontiers initiative (which began in 2006 and focuses on attracting petroleum and mineral exploration investment in under‑explored areas of the state):

… will be extended beyond 30 June 2012, with funding on a cost recovery basis … A new rental fee on the mining industry to fund the continuance of the New Frontiers initiative will commence on 1 July 2012. This funding mechanism is expected to generate some $4.5 million in 2012‑13, ramping up to $6.5 million per annum in future years. This level of funding represents an expansion of New Frontiers and will underpin its success into the future. (NSW DTI 2012a, p. 56)

Although mindful of the increased costs to industry, the submission by the New South Wales Minerals Council highlighted other benefits from user charging.

The new fees will, however, provide certainty and security, especially for the geological data collection program which only received short term funding from government. (sub. 11, p. 6)

The Commission believes the New South Wales experiment provides an opportunity to observe the impacts of cost‑recovery charging. In terms of administration, while all jurisdictions levy annual rental fees on exploration tenure, New South Wales is the only jurisdiction to hypothecate the revenue collected from those levies to pre‑competitive funding.

Draft recommendation 7.1

Governments should monitor the outcomes of the cost recovery funding approach to the provision of pre‑competitive geoscience information being adopted by the New South Wales Government, with a view to its possible broader application in those jurisdictions.

### Improving priority setting and performance management

Rigorous priority setting and performance management processes are important means of ensuring that public funding is allocated effectively. Used properly, these processes also ensure that work conducted by each geological survey organisation is not duplicated by other agencies nor extends into areas that might otherwise be performed by private explorers. The potential for duplicated effort is especially relevant where resource basins cross jurisdictional boundaries and where other public sector research agencies, such as the CSIRO and Cooperative Research Centres (e.g. the Deep Exploration Technologies CRC) are involved in related areas of research including land, environmental and hazard management.

While the priority setting and performance management approaches appropriate to different parts of Australia’s public research system will reflect differences in purpose and function, sound governance arrangements share some common features. This is particularly the case for mission‑based research agencies, such as Australia’s geological surveys which conduct strategic research with public good attributes. These characteristics are common to the work conducted by a number of other public sector research agencies, notably the CSIRO.

In that context, the Commission’s report into *Public Support for Science and Innovation* (PC 2007) argued that aspects of the CSIRO’s approach to priority setting and performance management may have wider applicability to other parts of Australia’s innovation system (including geological survey work). The aim of adopting such an approach would be to increase accountability across that system. CSIRO’s approach incorporates both ex‑ante and ex‑post appraisal processes, combines bottom‑up and top‑down input to research planning, involves broadly‑based consultation with potential users and other stakeholders and actively manages projects against performance benchmarks.

Most of Australia’s geological survey organisations rely on only informal networks with industry and their representative associations to inform decisions about how and where pre‑competitive geoscience funding should be allocated. Few of these organisations have employed structured performance management systems to evaluate research outcomes.

Some geological survey organisations do have more developed priority setting approaches. In particular, the Geological Survey of Western Australia (GSWA) formed the Geological Survey Liaison Committee. The Committee meets bi‑annually, is chaired by the WA Department of Mines and Petroleum and includes CSIRO, Curtin University, University of Western Australia, APPEA, AMEC, the Chamber of Minerals and Energy and direct industry representatives. According to GSWA:

The process provides key input into the strategic direction and planning of GSWA’s future work program in pre‑competitive geoscience in the areas of mineral‑, petroleum‑ and geothermal‑related exploration (including CO2 storage).

The main committee has two technical subcommittees reporting to it:

Mineral Exploration Technical Subcommittee (chaired by the AMEC representative);

Petroleum Exploration and Geothermal Technical Subcommittee (chaired by the APPEA representative).

The role and composition of the technical subcommittees is similar, but the technical subcommittees also review in detail GSWA’s geoscience products and services actually delivered versus those planned, and formally rate the GSWA’s performance in geoscience products delivered and exploration information management. (GSWA, pers.comm.).

The New South Wales Government has established a Geological Survey Advisory Committee to provide a forum for obtaining input and feedback from industry representatives (individual company executives) on the activities and outputs of the Geological Survey of NSW. The move to industry funding of pre‑competitive data acquisition will see a restructuring of the membership of that committee with broader representation being provided by industry associations such as the New South Wales Minerals Council and AMEC. This will reduce the risk of potential conflicts of interest emerging compared with individual company representation.

Further, as discussed earlier in this chapter, Australia’s pre‑competitive geoscience data is well regarded by explorers, and this can be considered evidence that the current arrangements of setting priorities and performance management may be sufficiently effective. The Commission is seeking feedback from stakeholders as to whether more formal priority setting and performance management arrangements of Australia’s geological surveys are warranted.

INFORMATION REQUEST

The Commission is seeking views from stakeholders as to whether more formalised approaches to priority setting and performance management would enable Australia’s geological survey organisations to make more informed decisions about the use of pre‑competitive geoscience information funding.

### Extending database coverage

Although Australia ranks highly in international comparisons of database quality, there are opportunities to improve on those databases and the attractiveness of Australia as an investment destination without the need for any additional public funding. This is due to significant gaps in resource reserve information from inadequate disclosure of that information by certain corporate entities.

Currently, resource companies listed on the Australian Stock Exchange (ASX) are required to report (with a lag) publicly on exploration results, mineral resources and ore reserves. However, foreign companies and privately owned Australian companies not listed on the ASX are not required to publicly report on mineral and energy resources. According to the Exploration, Investment and Geoscience (EIG) Working Group of the Standing Council on Energy and Resources (SCER 2012a), takeover and merger activity by foreign resource firms over time has reached a point where ‘ … Australia no longer has an accurate Economic Demonstrated Resource for a range of minerals’ (p. 4). The potential consequences are that a:

Lack of accurate, consistent data could reduce governments’ ability to forecast production for policy and revenue purposes. It also reduces the ability to make informed decisions on land‑use planning (SCER 2012b).

Although the states and Northern Territory impose reporting requirements on mineral and petroleum exploration and production licences, these are primarily focused on production data (for the purpose of royalty collection) and vary by commodity and jurisdiction. According to an issues paper prepared by the Department of Resources, Energy and Tourism and Geoscience Australia on behalf of SCER’s EIG Working Group:

Reporting requirements for minerals inventory and for production vary across the States and Territories … Reporting has not been systematically enforced by jurisdictions and information reported is focused more on production. (SCER 2012a, p. 4)

Moreover, according to SCER , the lack of systematic reporting has left gaps in the resource information base across commodities and jurisdictions. The extent to which data collection issues have hampered access to sufficiently reliable information on Australia’s resource reserves and production, and whether the imposition of reporting requirements on non‑reporting companies is warranted, is currently being considered by the EIG Working Group within SCER.

The issues paper for the EIG Working Group advanced three options to improve data collection rates from non‐reporting companies: a voluntary survey; a regulatory approach; and improved use of current data collection mechanisms.

* A voluntary survey could be administered by jurisdictions to collect resource information from companies. Jurisdictions would collate information and supply the data to GA by 30 September each year for inclusion in the national dataset.
* Under a regulatory approach, a compulsory requirement for non‐listed companies could be developed which mirrors the current compulsory reporting requirements for listed companies.
* Existing mechanisms could be used, such as State and Territory legislation and direct approaches by data collection and analysis agencies, to capture data from non‐reporting companies (SCER 2012a).

Submissions to this inquiry generally supported the aim of improved disclosure but warned against imposing additional regulatory costs on business. For example, AusIMM said:

AusIMM supports the development of a more comprehensive understanding of mineral resource and reserve estimates for Australia by establishing a mechanism to gather key data from companies not reporting to the ASX. However, this must be done in a way that does not impose significant administrative costs on businesses or discourage investment in minerals exploration and development in Australia. (sub. 12, p. 8)

The Commission notes that SCER is due to report on options to improve resource reserve disclosure shortly after the release of this draft report. Accordingly, the Commission will await the outcome of that process before making any recommendations on this issue.

1. Section 31 revenue refers to funding received from other Australian Government agencies and unrelated entities for the performance of services and the sale of goods. [↑](#footnote-ref-1)