Citation

Copyright and disclaimer
© 2014 CSIRO To the extent permitted by law, all rights are reserved and no part of this publication covered by copyright may be reproduced or copied in any form or by any means except with the written permission of CSIRO.

Important disclaimer
CSIRO advises that the information contained in this publication comprises general statements based on scientific research. The reader is advised and needs to be aware that such information may be incomplete or unable to be used in any specific situation. No reliance or actions must therefore be made on that information without seeking prior expert professional, scientific and technical advice. To the extent permitted by law, CSIRO (including its employees and consultants) excludes all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses and any other compensation, arising directly or indirectly from using this publication (in part or in whole) and any information or material contained in it.

For more information
Lead author contact details:
Dr Kieren Moffat
Senior Research Scientist
CSIRO Mineral Resources Flagship
e  kieren.moffat@csiro.au
@kierenmoffat

Acknowledgements
This research project was funded by CSIRO.
Thank you to Dr Justine Lacey for her contributions to earlier versions of this report.
# Table of contents

Mining in Australia

- Mining is big business, but not without its problems. .................................................... iii
- Understanding the mining industry’s social licence to operate ........................................ iii

Introduction.................................................................................................................................... 1

What does mining mean to Australians? .................................................................................... 2

- Mining is important for Australia ......................................................................................... 2
- Are we too dependent on mining? ......................................................................................... 3
- To what extent do Australians accept mining? ....................................................................... 3

The benefits of mining ................................................................................................................. 4

- Jobs, jobs, jobs ..................................................................................................................... 4
- General regional benefits ....................................................................................................... 4
- Infrastructure improvements .................................................................................................. 5
- Personal benefits and life satisfaction .................................................................................. 5

The negative impacts of mining ................................................................................................. 6

- The environment .................................................................................................................. 6
- Other sectors ........................................................................................................................ 6
- Health and cost of living ....................................................................................................... 6
- What do Australians think about FIFO/DIDO? ..................................................................... 6

Fairness, faith in governance and trust.................................................................................... 8

- Distributional fairness ......................................................................................................... 9
- Procedural fairness ............................................................................................................... 9
- Ensuring the mining industry does the ‘right thing’ .............................................................. 10
- Trust ................................................................................................................................... 11

Going a little deeper… what leads to acceptance of mining? .................................................. 12

- Is it worth it? Weighing up the benefits and impacts of mining .......................................... 12
- The importance of strong governance ............................................................................... 13
- Social licence is everyone’s business ................................................................................... 14
Mining in Australia

Mining in Australia has long been, and continues to be, a significant contributor to the Australian economy. Yet mining must also demonstrate that it has a ‘social licence to operate’ among those communities it operates alongside and society more broadly. This report aims to bring the voice of Australia’s citizens, on whose behalf Australia’s mineral and energy resources are managed, into the centre of the national conversation about the role of the mining industry in our society.

Mining is big business, but not without its problems

Australia possesses large volumes of valuable mineral and energy commodities. As a nation, we hold some of the world’s largest deposits of commodities like brown coal, zinc, iron ore, gold, silver, copper and lithium. Australia is in the top five producers of most of the world’s key mineral commodities and is the world’s largest exporter of alumina, metallurgical coal, iron ore, and lead. Australia is also expected to be the world’s largest LNG exporter by 2019, reflecting the large growth in this industry.

These volumes translate into a significant contribution to Australia’s economy. In 2011-12, exports by the mining industry accounted for 48.5% of Australia’s total exports, worth $147.4B. In the same period, mining represented 9.6% of Australia’s Gross Domestic Product (GDP), compared to 66.4% for the services sector, 7.4% for manufacturing and 2.4% for the agriculture, forestry and fisheries sector. The mining sector directly employs around 158,000 people and is estimated to indirectly employ a further 505,600 people.

Mining has also contributed to the development of regional and remote Australia in significant ways since the first mining discoveries of the 1840s. Resource development has created towns, community facilities, transport and communications infrastructure which allowed large parts of mineral rich Australia to be developed. The last two decades, however, have seen mining companies move to fly-in, fly-out arrangements for workforces in many places around the country, which has led to lower levels of investment in large infrastructure that has broader public benefit, and tensions with local communities.

The environmental impacts of the industry are also prominent among concerns about mining. While Australia has comprehensive legislative requirements at both state and Commonwealth levels, the environmental impacts of mining remain a significant concern among environmental and community groups. Recent years have also seen significant grass roots concerns within communities around resource developments regarding issues such as contamination and depletion of significant aquifers, land use competition, and the strain of significant mining activity on regional and remote communities.

Mining has also had a difficult relationship with Australia’s Indigenous peoples, with issues such as Native Title, land use access, impacts on areas of cultural significance, and the negotiation of benefit agreements all causing tension and conflict. The mining industry has worked to build more constructive relationships with Indigenous communities in the last two decades, and is now, Australia’s largest private sector employer of Indigenous people.

Understanding the mining industry’s social licence to operate

Mining is a big part of life in Australia, but the relationship between mining and society is not an easy one. As Australia’s national science agency, CSIRO is keen to understand more about what Australians think about mining.

Importantly, we want to understand how the impacts and benefits of mining, and the relationship between the mining industry, government and society, affects the level of acceptance of mining among Australia’s citizens – we want to understand what constitutes a social licence to operate for mining in Australia.

1 In this research, mining and the mining industry includes: coal mining, oil and gas extraction, metal ore mining, non-metallic mineral mining and quarrying, exploration and other mining support services (i.e. mineral exploration).
Introduction

This report summarises the key findings from a survey of 5,121 Australians about their attitudes toward the mining industry. The data was collected in two blocks, at the end of 2013 and in the first quarter of 2014. This survey forms part of a larger CSIRO program of work examining the relationship between mining and society at different scales in Australia and internationally. The data presented here was collected using an online survey.

We felt that it was really important to ensure the views of Australians who lived with and near mining or extractive operations were represented effectively. To do this we identified 11 regions that have a strong association with the extractive industries – see Figure 1 below – and matched these against regional areas in Australia without an extractive industry presence. We also collected data from Australians in urban or metropolitan areas.

We used a broad definition of mining in this study, based on the Australian Bureau of Statistics and Australian and New Zealand Standard Industrial Classification (ANZSIC; 2006). This definition of mining includes: coal mining, oil and gas extraction, metal ore mining, non-metallic mineral mining and quarrying, exploration and other mining support services (i.e. mineral exploration).

---

**Figure 1** Geographic representation of participant distribution (data points represent postcodes sampled not individuals) and key demographic information about the sample.

---

What does mining mean to Australians?

To understand how Australians view mining in the broader national context, we asked participants to rate their level of agreement on a scale from 1 (strongly disagree) to 7 (strongly agree) with a number of statements about mining in Australia.

Mining is important for Australia

Overall, mining was viewed as a central and significant contributor to Australia’s economy and standard of living, a ‘necessary’ industry for Australia, and being important to Australia’s future prosperity (see Table 1).

Comparing the responses of those living in different parts of the country, we found that participants living in mining regions more strongly believed that mining was important to Australia’s economy, standard of living, and way of life, although those in metropolitan areas most strongly believed that mining would support Australia’s future prosperity8.

Table 1 Mean scores for items examining the position of mining in Australia overall, and by region.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEAN AGREEMENT (STANDARD DEVIATION)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining is central to Australia</td>
<td>OVERALL 5.08 (SD = 1.26) MINING 5.14 (SD = 1.24) NON-MINING 5.00 (SD = 1.25) METROPOLITAN 5.10 (SD = 1.27)</td>
</tr>
<tr>
<td>Mining is not necessary for Australia</td>
<td>OVERALL 2.97 (SD = 1.47) MINING 2.89 (SD = 1.44) NON-MINING 2.93 (SD = 1.43) METROPOLITAN 3.06 (SD = 1.50)</td>
</tr>
<tr>
<td>Mining is important to our way of life in Australia</td>
<td>OVERALL 4.99 (SD = 1.27) MINING 5.06 (SD = 1.27) NON-MINING 4.93 (SD = 1.27) METROPOLITAN 5.00 (SD = 1.26)</td>
</tr>
<tr>
<td>Mining contributes to the standard of living in Australia</td>
<td>OVERALL 5.26 (SD = 1.22) MINING 5.33 (SD = 1.23) NON-MINING 5.21 (SD = 1.21) METROPOLITAN 5.25 (SD = 1.22)</td>
</tr>
<tr>
<td>Mining will support Australia’s future prosperity</td>
<td>OVERALL 4.77 (SD = 1.27) MINING 4.76 (SD = 1.28) NON-MINING 4.71 (SD = 1.27) METROPOLITAN 4.81 (SD = 1.27)</td>
</tr>
<tr>
<td>Mining contributes significantly to Australia’s economy</td>
<td>OVERALL 5.38 (SD = 1.19) MINING 5.46 (SD = 1.17) NON-MINING 5.36 (SD = 1.19) METROPOLITAN 5.36 (SD = 1.20)</td>
</tr>
</tbody>
</table>

Rated on a scale from 1 (strongly disagree) to 7 (strongly agree).

Only statistically significant results are reported as differences in this report. Predominantly these differences were calculated using an Analysis of Variance (ANOVA) test, and are significant at the p<.001 level. Due to the large sample size, caution has been taken to use a conservative significance level for difference testing.
To what extent do Australians accept mining?

We asked participants to respond to the statement, ‘to what extent do you accept mining in Australia’ on a scale from 1 (not at all) to 5 (very much so). Overall, the mean response to this item was 3.62 (SD = .94), which is above the midpoint of the scale used (i.e. 3), indicating a reasonably positive response. This average score was highly consistent across mining, non-mining and metropolitan areas. A breakdown of the percentage of respondents in each of the response categories is presented in Figure 3.

Are we too dependent on mining?

While Australians felt mining was important for Australia, they were also concerned that Australia as a country, and their communities more specifically, were too dependent on mining. As shown in Figure 2, it is clear that respondents felt the country as a whole was more dependent on mining than the communities they lived in. This pattern was less exaggerated for those living in mining regions who reported significantly higher levels of community dependency than those in non-mining regions or metropolitan areas.

Figure 2 Mean levels of perceived national and community dependence on mining overall, and by region.

Figure 3 Distribution of respondent acceptance scores for mining in Australia.
The benefits of mining

To examine the positive benefits that mining creates, we asked participants to respond to a range of benefits that are often understood to flow from mining for the country, regional communities and areas, and individuals. These included employment, general regional benefits and improvements to regional infrastructure. In general, the benefits of the industry for mining regions were rated most positively by those living in metropolitan areas.

Jobs, jobs, jobs

The creation of jobs for Australians was the most important perceived benefit amongst respondents (see Table 2). This included jobs for Australians, employment and training opportunities in regional areas and for Aboriginal Australians. This was largely consistent across mining, non-mining and metropolitan areas.

General regional benefits

General benefits for regional and Aboriginal communities were the next most important areas of benefit from mining. In particular, participants from metropolitan areas reported significantly higher levels of general benefit for regional communities than those from non-mining regions. However, there were no significant differences between the three regions regarding perceived benefits for Aboriginal communities.

Table 2 Mean ratings of the perceived ‘community’ benefits of mining overall, and for each region sampled.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEAN AGREEMENT (STANDARD DEVIATION)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OVERALL</td>
</tr>
<tr>
<td>Mining creates jobs for Australians</td>
<td>5.50   (SD = 1.16)</td>
</tr>
<tr>
<td>Mining provides opportunities for regional employment and training</td>
<td>5.30   (SD = 1.17)</td>
</tr>
<tr>
<td>Mining provides employment and training opportunities to Aboriginal Australians</td>
<td>5.06   (SD = 1.21)</td>
</tr>
<tr>
<td>Mining provides employment opportunities for women</td>
<td>5.01   (SD = 1.24)</td>
</tr>
<tr>
<td>The mining industry makes an important contribution to the development of young Australians</td>
<td>4.38   (SD = 1.34)</td>
</tr>
<tr>
<td>Mining has positive effects on regional communities in Australia</td>
<td>4.85   (SD = 1.29)</td>
</tr>
<tr>
<td>Mining has positive effects on Aboriginal communities in Australia</td>
<td>4.48   (SD = 1.30)</td>
</tr>
<tr>
<td>Mining has helped improve transport infrastructure such as roads and ports in regional Australia</td>
<td>4.69   (SD = 1.32)</td>
</tr>
<tr>
<td>Mining has helped improve communications and IT infrastructure in regional Australia</td>
<td>4.62   (SD = 1.27)</td>
</tr>
<tr>
<td>Mining has helped improve social infrastructure such as community centres and sporting clubs in regional Australia</td>
<td>4.49   (SD = 1.31)</td>
</tr>
</tbody>
</table>

Rated on a scale from 1 (strongly disagree) to 7 (strongly agree).
Infrastructure improvements
The next strongest ratings around benefits related to improvements in infrastructure (transport, social, and communication and information technology) in regional Australia as a result of mining activity. In general, participants from metropolitan areas reported the highest level of benefits regarding regional infrastructure development, with lowest levels of agreement among those that live in mining regions.

Personal benefits and life satisfaction
Whilst mining associated benefits at a national and regional level were rated quite positively, responses to ‘personal’ benefits were not as positive. Benefits in terms of personal and family financial benefit from mining were both rated quite low, particularly when compared with the perceived benefits to the ‘average Australian’ (see Figure 4). Respondents living in non-mining regions felt the least personal and family financial benefit while those living in cities reported the greatest level of personal benefit.

When asked about their level of satisfaction with living in their community, participants from all regions responded quite positively (M = 5.43, SD = 1.33), however participants living in mining regions reported a significantly higher level of satisfaction than those living in metropolitan areas.

![Economic benefits from mining](image)

Figure 4 Mean levels of perceived economic benefits from mining overall, and by region.
The negative impacts of mining

To examine the negative impacts of mining, we asked participants to respond to a range of issues including the environment, other industry sectors, cost of living, and the health of communities surrounding mining operations. In general, the negative impacts of mining were rated significantly more strongly by those living in mining regions, followed by those in non-mining regions, and then respondents in metropolitan areas.

### PERCEIVED NEGATIVES

- **The environment**
- **The agricultural sector**
- **Health of communities and cost of living**

### IS IT WORTH IT?

Considering the benefits and costs associated with mining, it is worthwhile to pursue mining in Australia

---

**The environment**

Overall, statements regarding the negative impact of mining on the environment received the strongest level of agreement. This included impacts on water quality (both groundwater and surface water), the environment in general, and mining’s contribution to climate change (see Table 3). When asked to rate the extent to which ‘mine rehabilitation is important to me’, participants were very strongly in agreement (M = 5.40, SD = 1.36), with those in mining regions even more so.

**Other sectors**

We also asked about the negative impacts of mining on other sectors and industries. In general, the impacts on the manufacturing sector and tourism and retail sectors were perceived to be low (below the midpoint of the scale), but impacts on the agriculture sector was perceived to be much higher.

**Health and cost of living**

There was also moderate agreement (above the midpoint of the scale, i.e. 4) that mining has a negative impact on the health of local communities, while the impacts on cost of living and effects on housing costs were rated quite low overall. For those living in mining regions, however, these impacts were rated significantly more strongly than by those in non-mining regions and metropolitan areas (see Table 3).

**What do Australians think about FIFO/DIDO?**

When asked specifically about fly-in, fly out and drive-in, drive-out (FIFO/DIDO) employment of mine workers, participants in mining regions were less supportive of FIFO/DIDO as a “sensible workforce strategy” (M = 4.24, SD = 1.63) relative to those in non-mining regions (M = 4.45, SD = 1.54) and metropolitan areas (M = 4.47, SD = 1.43). In addition, participants from all areas equally believed that FIFO/DIDO has somewhat negative impacts on local communities (overall M = 4.36, SD = 1.42).
Table 3 Mean ratings of the negative impacts of mining overall, and for each region sampled.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>OVERALL</th>
<th>MINING</th>
<th>NON-MINING</th>
<th>METROPOLITAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining has negative impacts on the environment</td>
<td>4.70 (SD = 1.49)</td>
<td>4.72 (SD = 1.53)</td>
<td>4.70 (SD = 1.50)</td>
<td>4.69 (SD = 1.46)</td>
</tr>
<tr>
<td>Mining impacts negatively on water quality (groundwater and surface water)</td>
<td>4.76 (SD = 1.40)</td>
<td>4.78 (SD = 1.47)</td>
<td>4.75 (SD = 1.40)</td>
<td>4.75 (SD = 1.36)</td>
</tr>
<tr>
<td>Mining contributes to climate change</td>
<td>4.37 (SD = 1.51)</td>
<td>4.29 (SD = 1.61)</td>
<td>4.34 (SD = 1.55)</td>
<td>4.44 (SD = 1.51)</td>
</tr>
<tr>
<td>Mining has negative impacts on the agricultural sector</td>
<td>4.55 (SD = 1.42)</td>
<td>4.65 (SD = 1.49)</td>
<td>4.53 (SD = 1.42)</td>
<td>4.50 (SD = 1.39)</td>
</tr>
<tr>
<td>Mining has negative impacts on the manufacturing sector</td>
<td>3.70 (SD = 1.35)</td>
<td>3.67 (SD = 1.36)</td>
<td>3.64 (SD = 1.32)</td>
<td>3.76 (SD = 1.37)</td>
</tr>
<tr>
<td>Mining has negative impacts on the tourism and retail sectors</td>
<td>3.80 (SD = 1.43)</td>
<td>3.78 (SD = 1.47)</td>
<td>3.81 (SD = 1.41)</td>
<td>3.80 (SD = 1.43)</td>
</tr>
<tr>
<td>Mining has negative impacts on the health of local communities</td>
<td>4.28 (SD = 1.47)</td>
<td>4.39 (SD = 1.55)</td>
<td>4.22 (SD = 1.46)</td>
<td>4.26 (SD = 1.44)</td>
</tr>
<tr>
<td>Housing is more expensive in my area as a consequence of mining activity</td>
<td>3.19 (SD = 1.69)</td>
<td>3.65 (SD = 1.81)</td>
<td>2.97 (SD = 1.60)</td>
<td>3.08 (SD = 1.64)</td>
</tr>
<tr>
<td>The cost of living excluding housing increased in my area as a consequence of mining</td>
<td>3.19 (SD = 1.64)</td>
<td>3.55 (SD = 1.71)</td>
<td>3.01 (SD = 1.59)</td>
<td>3.10 (SD = 1.60)</td>
</tr>
</tbody>
</table>

Rated on a scale from 1 (strongly disagree) to 7 (strongly agree).
Fairness, faith in governance and trust

Mining has a broad and complex relationship with Australian society. It creates jobs and economic opportunities for many and is an important component of our national economy. Yet, mining also brings challenges for people living alongside the industry and for governments who are charged with managing Australia’s mineral and energy resources on behalf of all its citizens. For example, mining creates job opportunities in communities surrounding mining operations but the use of fly-in/fly-out workforce strategies by many mining companies means that a significant number of people that work in mining live in capital cities.

To tease out some of this complexity, we asked participants about the distributive fairness of mining associated benefits, how fairly they felt they were treated in decision making processes regarding the industry, the level of faith they had in our legislative and regulatory frameworks for managing mining, and more broadly, the degree to which they trusted important players in the industry.

![Image showing distributional fairness of benefits](image)

Figure 5 Mean levels of perceived distributional fairness of benefits from mining overall, and by region.
Distributional fairness

We asked respondents to rate the extent to which they believed the benefits associated with mining were distributed fairly, and the extent to which Australia received its fair share of tax from mining. Overall, participants were not strongly of the view that the economic benefits of mining are distributed fairly, with the average rating across the whole sample below the midpoint of the scale used (see Figure 5).

As is clear in Figure 5, respondents felt more strongly overall that mining communities received a fair share of the benefits of mining. This was particularly the case when compared to perceived personal benefit. Looking across all three items, participants in metropolitan areas believed that the benefits of mining were distributed more fairly than those who lived in mining regions and non-mining regions, consistent with earlier patterns in the data.

And for those people living in mining communities specifically, the data indicates that the benefits of mining are perceived to have been distributed much more fairly at the community level than at the personal level.

We also asked participants the extent to which they believe Australia as a nation receives its fair share of tax from the mining industry. Responses were around the midpoint of the scale used (M = 4.02, SD = 1.66), and there was no difference in responses between mining, non-mining or metropolitan areas.

Procedural fairness

Procedural fairness in the present research refers to whether individuals perceive that they have a reasonable voice in decision-making processes. Therefore, the more people feel that they can participate in decision-making processes about mining and feel respected by important decision makers (e.g., governments and the extractive industries), the fairer they will regard procedures relating to mining in Australia.

We asked participants to rate the extent to which people in Australia have opportunities to participate in decisions about mining on a scale from 1 (not at all) to 7 (very much so). Responses overall were around the midpoint of the scale (M = 4.30, SD = 1.57), with no significant differences between the three areas.

We also asked participants to rate the extent to which the mining industry, state and federal governments listen to and respect community opinions (see Figure 6). As with distributive fairness, responses to those items were at or below the midpoint of the scale. There are two patterns in this data. First, participants felt that the mining industry listened to and respected community opinions more than state and federal governments did. Second, those in metropolitan areas felt more heard and respected by industry and governments than those in mining and non-mining regions.

9 All of the differences noted here are statistically significant at the p<.001 level

Figure 6: Mean levels of perceived procedural fairness related to mining overall, and by region.
Ensuring the mining industry does the ‘right thing’

Feeling heard and respected is fundamental to a sense of procedural fairness. But whom or what can actually influence the way mining takes place? We asked participants to rate the extent to which they believe legislation and regulation, and state and federal governments, can hold the mining industry to account. In both of these areas, responses overall were below the midpoint of the scale, indicating a lack of faith that these formal institutions are sufficiently able to influence the way mining takes place (see Table 4). Again, participants in metropolitan areas were more positive about the influence of these formal mechanisms than those living in mining regions.

### Table 4 Mean ratings of governance capacity overall, and by region

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEAN AGREEMENT (STANDARD DEVIATION)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OVERALL</td>
</tr>
<tr>
<td>State and federal governments are able to hold the mining industry accountable</td>
<td>2.81 (SD = 1.05)</td>
</tr>
<tr>
<td>Legislation and regulation can be counted on to ensure mining companies do the right thing</td>
<td>2.85 (SD = 1.02)</td>
</tr>
</tbody>
</table>

Rated on a scale from 1 (not at all) to 5 (very much so).

Mining communities and the Australian public more generally, also have the ability to influence the way mining takes place, either through directly influencing mining companies or through influencing government policy. Responses overall to items examining citizen agency (see Table 5) were all above the midpoint of the scale with respect to levels of agreement. In a trend that appears multiple times in this dataset, those that lived in metropolitan areas rated their agreement with this sentiment higher than those who were actually members of mining communities. Finally, there was a very strong sentiment regarding the need to gain the consent of local communities and Indigenous communities before mining development takes place.

### Table 5 Mean ratings of public efficacy, agency and need for consent overall, and by region

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEAN AGREEMENT (STANDARD DEVIATION)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OVERALL</td>
</tr>
<tr>
<td>I think mining communities can successfully defend their local interests together</td>
<td>4.31 (SD = 1.33)</td>
</tr>
<tr>
<td>I think the Australian public can successfully defend its national interests together</td>
<td>4.43 (SD = 1.37)</td>
</tr>
<tr>
<td>I think the Australian public are capable of ensuring the mining industry do the right things for this country</td>
<td>4.06 (SD = 1.51)</td>
</tr>
<tr>
<td>I think mining communities are capable of ensuring the mining industry do the right things for local communities</td>
<td>4.12 (SD = 1.45)</td>
</tr>
<tr>
<td>I think the Australian public is able to influence governments’ mining related policies</td>
<td>4.04 (SD = 1.49)</td>
</tr>
<tr>
<td>I think mining communities are able to influence governments’ mining related policies</td>
<td>4.35 (SD = 1.42)</td>
</tr>
<tr>
<td>It is necessary to gain the consent of local communities before mining development takes place</td>
<td>5.41 (SD = 1.42)</td>
</tr>
<tr>
<td>It is necessary to gain the consent of Indigenous communities before mining development takes place</td>
<td>5.23 (SD = 1.52)</td>
</tr>
</tbody>
</table>

Rated on a scale from 1 (strongly disagree) to 7 (strongly agree).
Moreover, when we asked participants the extent to which they agreed that the mining industry was socially responsible, responses were around the midpoint of the scale used \((M = 4.07, SD = 1.40)\) and consistent across mining, non-mining and metropolitan areas. However, participant responses were slightly below the midpoint of the scale regarding the extent to which they believe the mining industry is prepared to change its practices in response to community concerns \((M = 3.85, SD = 1.50)\), with those in metropolitan areas \((M = 3.93, SD = 1.46)\) more strongly in agreement than those in mining \((M = 3.75, SD = 1.54)\) and non-mining regions \((M = 3.81, SD = 1.50)\).

**Trust**

We asked participants to rate their level of trust in a range of important actors in the mining industry in Australia: the mining industry, state government, federal government, and non-government organisations (NGOs). We averaged responses to three items assessing trust in each of these groups: the extent each was trusted to act in the best interests of society, act responsibly, and do what is right. Two patterns are clear in the data (see Figure 7). First NGOs were most trusted, with industry second, followed by federal and state governments. Second, the levels of trust overall, for all groups, were low (below the midpoint of the scale).

![Figure 7 Mean level of respondent trust in mining industry actors.](image-url)
Going a little deeper… what leads to acceptance of mining?

Mining is a complex and important part of life in Australia, and the survey results in the previous sections provide a strong foundation for understanding this complexity a little better. However, if the mining industry is to be sustainable in Australia, it is important that we understand what underpins its ‘social licence to operate’, or its acceptance within society. We explored this question in the national survey data in two ways. First, we explored how Australians weigh up the benefits and impacts of mining in determining their level of acceptance of the industry. Second, we explored the role of Australia’s governance systems and behaviour of the mining industry in building trust and acceptance with Australia’s citizens.

Is it worth it? Weighing up the benefits and impacts of mining

Using multiple regression analysis\(^1\), we examined how Australians’ perceptions of mining associated impacts and benefits relate to acceptance of mining. We included composite measures of the three main impact and benefit areas in this analysis, respectively:

- Impacts on environment (including climate change), cost of living, and other sectors (including manufacturing, agriculture and tourism and services);
- Employment and other regional benefits, general economic benefits (personal, family and national wealth), and development of regional infrastructure (transport, communications and social).

All of these impacts and benefits were significant predictors of acceptance, such that the more negative respondents felt the impacts were, the less they accepted the industry; and the more positive respondents felt the benefits were, the more they accepted the industry.

Because of the large sample size in this survey (5121 respondents), it is important to look at the strength of the relationships, and not just their statistical significance. To this end, the two strongest predictors of acceptance in the analysis were impacts on the environment and employment benefits that flow from mining (environmental impacts are explored in more detail in the following section).

---

**ACCEPTANCE OF MINING**

![Diagram of Acceptance of Mining](Link to Diagram)

**Cost of living impacts**

- \( \beta = 0.02 \) (0.01)

**Impacts on other sectors**

- \( \beta = -0.06^{**} \) (0.12**)

**Environmental impacts**

- \( \beta = -0.18^{**} \) (0.24**)

**Balance of benefits over impacts**

- \( \beta = -0.19^{**} \) (0.34**)

**General economic benefits**

- \( \beta = 0.09^{***} \) (0.13***)

**Regional infrastructure benefits**

- \( \beta = 0.05^{***} \) (0.12***)

**Employment & other regional benefits**

- \( \beta = 0.19^{***} \) (0.34***)

**Figure 8 Regression model of benefits, impacts and balance measure predicting acceptance of mining.**

Beta weights (\( \beta \)) represent the relative strength of each relationship. Positive \( \beta \)-values indicate a positive relationship; negative \( \beta \)-values indicate a negative relationship. \( \beta \)-values in brackets represent the strength of these relationships before the balance of benefits and impacts measure was included in analyses. ** indicates relationship is significant at the p<.001 level.

---

12 A brief overview of multiple regression (MR) analysis may be found at the following link: [http://www.uta.edu/faculty/sawasthi/Statistics/stmulreg.html](http://www.uta.edu/faculty/sawasthi/Statistics/stmulreg.html)
Next, we were interested to understand whether Australians felt that the benefits of mining outweigh the perceived impacts of mining, and how that affected their level of acceptance of the industry. To do this, we included the following item into this regression analysis at the final step: “considering the benefits and costs associated with mining, it is worthwhile to pursue mining in Australia”.

The results from this analysis show that this item (i.e., asking Australians to weigh up the benefits and impacts of mining) was a strong positive predictor of acceptance over and above the other individual impact and benefit measures. In addition, participants from mining, non-mining and metropolitan areas were equally positive in their agreement with this item (M = 4.97, SD = 1.32).

This means that Australians, in general, do consider it worthwhile to mine in Australia after weighing up the benefits and costs. It also indicates that Australians have a developed and considered understanding of what it means to have a significant mining industry, and that in general, in their minds, the benefits of mining currently outweigh its impacts. This data suggests that a stronger balance of benefits over the costs of mining is associated with a higher level of acceptance of mining. This relationship would also suggest that if this balance is perceived to move toward the negative impacts of mining over the benefits, that acceptance of mining will be eroded. (Figure 8 provides a graphical representation of these relationships.)

The importance of strong governance

In Australia, governments are always trying to find a balance between supporting the growth of mining development and managing the interests and concerns of citizens regarding mining development. In some states around Australia, state governments are working to streamline the process for having a mine or extractive operation approved. But does this practice risk undermining public confidence in the legislation and regulation that governments apply to ensure the mining industry operates in an appropriate and acceptable way, particularly as this relates to environmental impacts?

We looked at this question by examining how perceptions of governance capacity and environmental impact interact to predict acceptance of mining. The relationship we found is presented in Figure 9, below.

The highest level of acceptance was found among those Australians that felt mining had a low impact on the environment and had strong faith that our governments and legislation/regulation can ensure mining companies do the right thing (i.e., governance capacity). The opposite was also true. That is, the lowest levels of acceptance of mining were among those people who felt mining had a high impact on the environment and had low faith in Australia’s governance capacity.

![Figure 9](image)
Based on these findings, there is a risk that streamlining government approval processes may be perceived by the public as reducing the capacity of governments to hold the mining industry to account against its environmental impact commitments and conditions. Paradoxically, reducing the legislative and regulatory burden on industry may make it easier to get a mine approved and operating, but may simultaneously erode public confidence in legislative and regulatory power, which may reduce the acceptance of mining more broadly and make it harder to operate a mine efficiently under conditions of increased social conflict.

Social licence is everyone’s business

While impacts and benefits of mining are important in shaping the level of acceptance of mining among Australia’s citizens, achieving a social licence is also about building trust between companies, governments, and society. There is a growing understanding that the way people are treated in decision-making processes, the way that benefits are distributed from mining, and the role of governance in setting the rules for mining, are important to developing this trust and acceptance.

We explored this in the data by examining the role of the following measures in predicting trust in industry and acceptance of the industry, in Australia:

- **procedural fairness** – the extent to which the industry listens to and respects community opinions, and changes its practices in response to community concerns;
- **distributive fairness** – the extent to which economic benefits from mining are distributed fairly, and each citizen receives a fair share of the benefits of mining;
- **governance capacity** – the extent to which Australians feel that our state and federal governments, and legislation/regulation, can ensure mining companies do the right thing.

To do this, we used path analysis, a sophisticated statistical modelling technique that allows us to examine the relationships between these measures simultaneously. The results of this analysis can be seen in Figure 10, below. Higher numbers indicate stronger relationships; for example, higher levels of trust lead to higher levels of acceptance.

The results suggest that:

- trust in the industry is a strong predictor of acceptance of industry. Put another way, the industry’s social licence is facilitated by the level of trust that the Australian public have in it
- procedural fairness in the way that industry engages the public is a strong positive predictor of trust in the industry
- the more that Australians feel the benefits of mining are distributed fairly, the higher their level of trust in the industry
- the more faith that people have in Australia’s governance capacity to ensure mining companies do the right thing, the more they accept the industry
- but, perceptions of governance capacity is a stronger positive predictor of trust than it is of acceptance – trust is a critical vehicle for achieving social licence
- procedural and distributive fairness, and governance capacity are all strongly positively related to each other – more of one leads to more of the others

13 A brief overview of path analysis may be found at the following link: [http://en.wikipedia.org/wiki/Path_analysis_%28statistics%29](http://en.wikipedia.org/wiki/Path_analysis_%28statistics%29)
The values on each arrow are beta weights (β) and represent the relative strength of each relationship. Positive β-values indicate a positive relationship; negative β-values indicate a negative relationship.

Figure 10 Social acceptance of mining path model.

Together, these results indicate that building trust and acceptance of industry (i.e., a social licence) requires more than just the actions of either industry or governments alone – a social licence is dependent on these important parts of the mining industry working together.

This conclusion is strengthened by the relatively stronger relationship observed between governance capacity and trust in industry compared to that observed between governance capacity and acceptance.

Australians trust and accept the industry more when they feel heard by the industry, when it is responsive to their concerns, when benefits from mining are shared equitably, and when the legislative and regulatory frameworks we have in place provide confidence that industry will do the right thing.

From this data then, we can see that the Australian public are more accepting of the mining industry in Australia when industry and governments work together to build trust in the industry – holding a social licence to operate is, therefore, the responsibility of governments and industry working together with communities to promote effective, constructive, and mutually beneficial relationships.

Have your say – get social

We want you to have your say on the big issues around mining. Tell us what you think the data means, tell us what we should do next, be part of a national conversation about mining in Australia.
AT CSIRO WE SHAPE THE FUTURE.
We do this by using science to solve real issues. Our research makes a difference to industry, people and the planet.

FOR FURTHER INFORMATION
CSIRO Senior Research Scientist
Dr Kieren Moffat
e kieren.moffat@csiro.au
@kierenmoffat

CSIRO Postdoctoral Fellow
Dr Airong Zhang

CSIRO Research Projects
Ms Naomi Boughen