Queensland Productivity Commission Bill 2024

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Submission

by the

Science Integrity Alliance

to the

Governance Energy and Finance Committee

Queensland Productivity Commission Bill 2024

Supporting the integrity of science behind government policy

The Science Integrity Alliance (SIA) is an informal group which formed around six months ago to advocate for improvements in the integrity of scientific evidence used for public policy decisions in Queensland. The SIA includes representatives with interests in agriculture, tourism, forestry, fishing, mining, thinktanks and environmental protection. The group was formed after the LNP made known its intention to create a Queensland Productivity Commission. We believe it is a suitable vehicle to undertake audits of scientific evidence used for public policy decisions. This is because faulty science evidence can have a major negative impact on public policy and regulations resulting in economic loss and reduced living standards. Some of the members of this informal group will write separate submissions which may focus on other matters related to the Queensland Productivity Commission.

This submission is endorsed by the following

Peter Ridd. Chairman, Australian Environment Foundation.

Michael Guerin. CEO AgForce

Graham Young. Executive Director, Australian Institute for Progress

Allan Parker. Manager, Kalamia Cane Growers Organisation

Stephen Ryan. CEO Queensland Cane, Agriculture and Renewables (QCAR) and Australian Cane Farmers Association (ACFA)

Nick Jorss. Chairman, Bowen Coking Coal.

Dale Stiller. Acting Chairman, Property Rights Australia.

Dale Hollis. Bundaberg Ag-Food and Fibre Alliance

Richard Gilmore. Pristine Reef Fish

Rob Erskine. Manager Cairns Tackle World

Dan McCarthy. Cairns Professional Game Fishing association

Rosco Benstead. FNQ Consultants (including Cape York cattle and Aboriginal organisation interests)

Neil Green. Past president Queensland Seafood Industry Association

Peter Rutherford. South East Timber Association (Victoria and NSW)

Steve Dobbyns. Jamax Forest Solutions and Executive Officer, Forest & Wood Communities Australia.

1 Summary

In this submission the SIA strongly support the legislation to form the Queensland Productivity Commission (QPC). We are particularly happy that the stated main purpose of the Bill (part 1 section 3) is sufficiently broad that it can include commissioning the QPC to investigate the veracity of scientific evidence behind economic and social issues. The main purpose includes "… to provide independent advice to the Minister in relation to economic and social issues, regulatory matters or legislation having particular regard to productivity, economic growth and improving living standards in Queensland." If scientific evidence is unreliable, the resulting legislation and regulations could cause significant economic and social damage.

We suggest that a Science Integrity Unit within the QPC should be formed to act as a science 'Red-Team' – to audit scientific evidence. The function would not be to draw final conclusions about scientific merit around an issue, but to check and challenge the science evidence and search for any weaknesses. This is a fundamental part of the scientific system which seems often to be missing within some science institutions. Only after science has passed through a concerted challenge does it become suitable for consideration for public policy decisions. In examples given in this submission (section 2), it seems probable that many pronouncements from science institutions have not gone through such a systemic quality assurance process.

SIA suggest that initial science integrity audits could focus on issues where there is strong *prime facie* reason to believe scientific evidence has not been fully quality assured. An example would be the closure of the Gulf of Carpentaria net fishery to help "save" the Great Barrier Reef despite this region being many hundreds of kilometres from the reef and on the wrong side of Cape York Peninsula. Was this decision, which had a major economic and social impact on the Gulf fishing industry, based on quality assured science evidence?

We submit that the QPC should be a final stage in the quality assurance processes applied to selected scientific research used for public policy decisions. Legislation should never be based on science evidence that has not been fully checked.

Who would argue against a little more quality assurance when the cost of getting decisions wrong can be billions each year, as well as the social cost to the families and communities affected by the decisions?

2 The Problem:

There is a growing consensus that many of the industries in regional Queensland are being affected by regulations and legislation based on scientific evidence that is not adequately quality assured. Some of these regulations are having significant adverse economic and social impact. In the following examples, productivity issues are identified along with *prime-facie* evidence that the science base is not properly quality assured. Each of these examples could thus benefit from examination and audit by the QPC.

2.1 Closure of Gulf of Carpentaria net fishery to 'save' the Great Barrier Reef.

After UNESCO threatened to declare the Great Barrier Reef (GBR) as 'endangered', the Federal government, in conjunction with the Queensland government, offered to close parts of the Gulf of Carpentaria barramundi fishery. The southern Gulf is 700 km from the GBR, and on the wrong side of Cape York. Therefore, it would be useful to evaluate if the scientific evidence upon which this decision was based had undergone a full quality assurance process, or any process at all. A similar comment also applies to the east coast barramundi fishery closures.

2.2 Spanish Mackerel restrictions: In 2023, the Spanish mackerel fishery was severely restricted by regulation. This decision was based on evidence purporting to show the fishery was just 17% of the levels before European settlement. However, the scientific basis of this claim includes data of fish catches going back a century, the accuracy of which has attracted strong criticism from fisheries scientists. In addition, the mathematical models used to claim the fishery has been greatly reduced has also attracted considerable criticism

2.3 Vegetation management laws: Large parts of Queensland are subject to stringent vegetation management regulations and there are frequently media reports claiming that deforestation is occurring at a rapid rate. However, large areas of Queensland are rapidly becoming covered with woody weeds – native species – which have spread into areas that were previously grassland before European settlement. It is now often illegal to clear some of these regions despite not being the original pre-European vegetation. In addition, foreign markets, such as the European Union, are starting to implement trade restrictions based on whether agricultural produce comes from 'deforested' areas. It is thus essential that scientific evidence on this matter be thoroughly quality-assured.

2.4 Coal Mine denied permission:

The Styx Coal Project, about 150 km north of Rockhampton, failed to get regulatory permission to proceed in 2023 because "the mine is an open-cut coal mine less than 10km from the Great Barrier Reef, and the risk of pollution and irreversible damage to the reef is very real." In fact, the mine is 10 km from the headwaters of a tidal creek which flows into Broad Sound, a large and very muddy bay. The closest coral on the Great Barrier Reef is 150 km offshore. How the mine could have any significant influence on the GBR was not explained.

The Styx Coal Project, if it had been approved, would have produced roughly 3 million tonnes of coal per year and earned $4.4 billion over the 20-year mine life.[1] The cost per year is thus around $200 million. It remains to be seen if similar reasoning used to stop the Styx Coal Project will be used in the future against other Queensland coal mines, most of which are in GBR river catchments.

2.5 Great Barrier Reef and pesticide.

Farmers in GBR catchments are subject to extremely stringent regulations on the use of pesticides - regulations that are not applied to other farmers in Australia. These regulations are based on research evidence that states pesticides are damaging the GBR. However, data of pesticide concentrations on the GBR[2], which is generally 40 -100 km from the shore, shows pesticides are in such low concentrations that they cannot be measured even with the most ultra-sensitive scientific equipment. Even inshore waters have extremely low concentrations. The water of the GBR is flushed very quickly with the Pacific Ocean which mitigates against any impacts of pollutants. For example, in just eight hours, as much water flushes into and out of the GBR from the Pacific Ocean, as comes down all the Queensland rivers combined in a whole year.

2.6 Great Barrier Reef Tourist Industry – damage to reputation.

Every few months there is usually a story in the world media about the perilous state of the GBR. These stories are usually based on pronouncements from science institutions. It is notable that these pronouncements almost never mention that the GBR has recorded more coral in each of the last three years than in any of the preceding 35 years since records began. The GBR presently has record high amounts of coral according to data from the Australian Institute of Marine Science. But tourists around the world are told, a few times each year, the opposite. It seems inconceivable that the negative publicity about the GBR is not impacting the tourist industry. Research, soon to be released from the Institute of Public Affairs, indicates that this bad publicity about the GBR, has reduced tourist numbers by 20% or more, and is costing the Queensland tourist industry $500 million per year.

2.7 Are we focusing on the wrong environmental Issues?

Presently the Queensland and Federal governments spend large sums mitigating environmental problems. For example, around half a billion is spent each year on the GBR. However, some other important environmental issues, such as fire management of forests, noxious weeds and feral animals, receive very little funding. If the government is not using properly quality-assured science to develop its environmental priorities, it is possible that the environmental outcomes are not optimal, i.e. we are spending resources on the wrong environmental issues. If so, there are doubtless economic and social costs which could be avoided.

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[1] https://cqcoal.com.au/wp-content/uploads/2017/11/A10a%20-%20Economic%20Assessment%20Rev%202%20-%20No%20name%20change.pdf

[2] Although there are fringing reefs on the coast and islands near shore, these represent only about 1% of the coral that exists on the GBR proper.

3 QPC as a Science 'Red-Team'. How to support the integrity of science advice.

Red Teams are a system of organised challenge used commonly in industry and more famously in the military. In science they are also commonly used in industrial and medical applications. Every new drug goes through an extended period of challenge before it is certified. Financial auditors are accountancy Red-Teams. Every parliament has an official Red-Team – called the His Majesty's Loyal Opposition. Every court case has a prosecution and a Red-Team called the defence council.

Unfortunately, science used for public policy often does not go through a Red-Team audit process.

It is also possible, even probable, that many science institutions are affected by groupthink, ideology and raw self-interest to maintain funding. Key features of reliable scientific systems – guaranteed challenge, argument, debate, questioning, and review – are missing. Dissent, instead of being encouraged as an integral part of the system, is actively suppressed often for what appears to be ecopolitical reasons.

Such official Red-Teams must become standard in the use of scientific advice in agriculture, fisheries and many other areas of government activity. We are thus proposing a major system innovation to implement a missing part of a failing system.

The QPC would be an ideal vehicle for this to occur. According to the proposed QPC legislation, the main purpose is to give "…independent advice to the Minister in relation to economic and social issues, regulatory matters or legislation having particular regard to productivity, economic growth and improving living standards in Queensland."

Scientific advice often has major economic and social implications to Queenslanders, and should thus be squarely within the scope of consideration by the QPC.

4 Who would argue against a little more quality assurance?

It is difficult to argue against the proposition of extra quality assurance processes to audit science. Nobody would seriously argue against the function of financial auditors, or defence lawyers in legal cases. And the costs of a QPC audit would be miniscule compared to the costs of using faulty scientific evidence.

In addition, there is considerable support for the idea of science Red-Teams from within the science community. In recent years the Australian Institute of Marine Science (AIMS) has developed systems of internal Red-Teams. AIMS's support for other Red-Teams can be gauged from the following exchange between Senator McDonald and the AIMS CEO (Dr Hardisty) in 2020 at the Senate Inquiry[3] into 'Regulation of farm practices that impact water quality outcomes in the Great Barrier Reef.'

[3] https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Rural_and_Regional_Affairs_and_Transport/GreatBarrierReef/Public_Hearings

> Senator McDONALD: Does AIMS believe that other scientific institutions could benefit from the use of similar systems like the red-blue approach?
>
> Dr Hardisty: Yes.
>
> Senator McDONALD: Are they used in all other institutions?
>
> Dr Hardisty: I couldn't tell you.
>
> Senator McDONALD: Does AIMS, then, support the idea of a formal red-blue team organisation that would help with consensus statements and other major synthesis documentations?
>
> Dr Hardisty: AIMS supports anything that will increase and improve our knowledge over time.

In addition, two of the endorsees of this submission (PR and AP) were present at a major public meeting[4] with some of the most senior scientists working on the Great Barrier Reef. The head of the Great Barrier Reef Science Consensus committee, arguably the most influential reef scientist of all, was asked if she would have any objections to a formal quality audit carried out by scientists acceptable to the industries affected by the science evidence she had summarised. She replied she did not.

One can hardly object to such a reasonable request.

This submission is about supporting integrity of science. It is not undermining science, because challenge should be an integral part of science.

5 Cost-Benefit ratio of science auditing

The cost of implementing science auditing would be at most a few million dollars per year. A useful start could be made with less than this. On the other hand, the costs of implementing policy that is based on incorrect science evidence could easily be measured in billions per year. For example, the abandoned Styx coal project was worth $200 million per year, the cost of faulty science evidence on the GBR tourist industry is unlikely to be less than $500 million per year. The restrictions on the fishing industry over the last few decades can easily be calculated to exceed $50 million per year.

The above, is far from a complete list of costs, and does not consider many opportunity-costs of economic activity that could not proceed due to unnecessary regulation.

The cost-benefit ratio could easily be 1:1000.

On an academic point, it would be a worthwhile activity of the QPC commission to calculate the potential cost to the Queensland economy of potentially faulty regulation based on questionable science.

[4] https://www.nqdrytropics.com.au/burdekin-regional-water-quality-science-forum/

6 Science auditing in a Productivity Commission is unusual.

The implementation of a Science Integrity Unit within the QPC is a significant innovation which is not present, for example, in the federal version of the Productivity Commission. Members of the federal productivity commission are often economists and thus rarely, if ever, get involved with detailed scientific analysis. As the scientific skill set is different to purely economic analyses, thought would need to be given to how the science integrity unit would be set up.

Firstly, it would be impossible for the QPC to employ staff that were experts in the vast range of scientific fields that could be required. Inevitably the QPC would need to contract the science audits to suitably qualified personnel. They would also need to be reasonably independent of the work they were commissioned to audit. The task assigned to them would be to try to find problems. It is not the task to be the final judge on a scientific matter. Using an analogy with a court case, they are not acting as a judge or jury. They are more akin to defence lawyers.

Merely knowing these Red-Blue debates are guaranteed to occur would encourage the science institutions to implement higher standards of quality assurance and improve the reliability of their work. This is a similar situation as with company accounts, which are always audited. Financial audits rarely find serious error or fraud because accountants know they will be audited. This is presently not always true of scientists.

7 How a Science Integrity Unit might operate within the QPC.

The SIA is primarily interested in supporting the general principles of science integrity checking, and is open to the details of how this might be implemented. One possibility is outlined below.

- A minister nominates a scientific issue to the QPC to be the subject of a robust quality audit. This may occur after submissions are called from industry about issues that have a significant economic or social impact on the living standards of Queenslanders. An example might be "does gillnet fishing in the Gulf of Carpentaria negatively impact the Great Barrier Reef?"
- The Science Integrity Unit within the QPC invites responses from science institutions (Blue Team) and the government authorities who claim gillnet fishing in the Gulf is a problem.
- The Science Integrity Unit selects the Red-Team, which is a small group of suitably experienced scientists with good records, and commissions them to challenge any of the Blue-Team responses. Can they find anything wrong, questionable, or uncertain? Red-Team scientists could come from the science institutions, but a large pool also exists in commercial consulting firms. If Red-Teams can be made a routine part of government process, some scientists and consulting companies would ultimately

make a living being science auditors. This is the same as accountancy auditors being a separate, but essential, branch of the accountancy profession.

- Multiple competing and independent Red-Teams could be implemented to encourage the discovery of any weaknesses.
- Selection of the Red-Team must **not** be influenced by the science institutions that produced the work in the first place. Selection should be done with consultation with the industries and stakeholders affected.
- Once the Red-Team reports on the issue, the Blue Team (science institutions) are invited to respond in writing.
- A 'Science Integrity Analysis Hearing' is then organised along similar lines to a parliamentary inquiry but instead of politicians quizzing experts, the experts from the red and blue team conduct a civilised public debate. This system has an advantage over a standard parliamentary enquiry. It is much harder for a Blue-Team scientist to wiggle off the hook of a hard question when they are facing a highly specialised scientist in the Red-Team rather than a politician who is not an expert in the field.
- The result is that, unlike the situation at present, the science institutions could not avoid scrutiny and can have hard and probing questions asked of them. For example, *"why does your organisation suggest pesticides are killing the GBR when concentrations are so low that they cannot be detected even with the most sensitive equipment*." At present, this question is ignored and unanswered.
- Merely knowing these Red-Blue debates are guaranteed to occur would encourage the science institutions to implement higher standards of quality assurance.

8 Conclusion

Scientific evidence is used to develop legislation and regulations with potentially enormous costs to the Queensland economy. A crucial part of the scientific process is challenge and debate.

Who would argue against the proposition of a little more quality checking?

Submitted by Peter Ridd on behalf of the Science Integrity Alliance.

Peter Ridd

(Chairman, Australian Environment Foundation)