

REPORT OF THE INDEPENDENT COST RECOVERY REVIEW PANEL

Cost Recovery in the Aquaculture Sector Department of Primary Industries and Regions (PIRSA)

Final Report – October 2023

Report prepared for the

Minister for Primary Industries and Regional Development (South Australia)

Final Report prepared by the Independent Cost Recovery Review Panel

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Executive Summary

Marine resources are potential sources of many ecosystem services. In the case of marine-based aquaculture, the marine environment provides habitat and regulating services to support farmed production of seafood. Unregulated, the resource may become overexploited, and the capacity of the environment to continue providing these services reduced. Over time, governments have sought to limit access to these resources through formal arrangements (e.g., lease arrangements to limit access) to allow proper conservation and management measures to be implemented to protect them from over-exploitation and ensure other incidental species and resources are not endangered, and to ensure they are used efficiently and the community receives social and economic return from those who benefit from that limited access.

In South Australia, government has decided to limit access to marine resources through formal arrangements (e.g., licences/leases) to achieve these benefits. Responsibility for the management of these resources rests with the Department of Primary Industries and Regions (PIRSA). In 1995, in recognition of the premise that aquatic resources are owned by the State, the South Australian Government attributed costs of this management across the various sectors under management (recreational, aquaculture, commercial) and then applied cost recovery at varying rates to each sector in 1995. PIRSA progressed cost recovery through the early 2000s using a set of PIRSA Fisheries Principles broadly consistent with those outlined by the Productivity Commission Review into cost recovery in 2001. A Cost Recovery Policy was established in 2009 (PIRSA, 2020) to enable consistent decision making on the appropriate recovery of costs of aquaculture management services delivered by PIRSA. This policy, and its predecessors, has been operating for approximately 14 years.

In 2023, an Independent Review of cost recovery arrangements was requested by the current Minister. The Terms of Reference for this Independent Review noted that *'Irrespective of the findings of the [past] independent reviews and the recent improvements in the cost recovery process, there remains significant and increasing challenges with the current process.'*¹

This Review Panel found strong overall support from PIRSA and the aquaculture industry for the conceptual basis of cost recovery and for the broad objectives and principles that are set out in the various policy documents that underpin the use of cost recovery in South Australian fisheries. The Panel identified goodwill on the part of PIRSA, SARDI and industry to positively engage in the ICRRP review process with the aim to improve the cost recovery system in the aquaculture sector in South Australia.

The Panel supports the continued application of cost recovery in the aquaculture sector in South Australia. In considering the way forward, the Panel reviewed the application of the existing cost recovery approach and alternate revenue-raising models (e.g., resource rent, taxation, royalties) in other jurisdictions, both in Australia and internationally. The Panel found no alternative to the existing approach that would be consistent with the overall objectives of cost recovery as set out in both the Australian (Department of Finance, 2022) and South Australian cost recovery policy and guidelines and applied in practice in the Commonwealth, New Zealand and South Australia.

However, the Panel identified weaknesses in several aspects of the current cost recovery system. The Panel is strongly of the view that there needs to be a 'revise and reset' process entered into by industry and government to address these weaknesses. This involves reconsideration of the principles and implementation guidance (revise) and based on this revision, recalibrate cost recovery settings, charges (reset).

¹ Terms of Reference, South Australian Commercial Fisheries Cost Recovery Review Independent Cost Recovery Review Panel (Appendix 2)

The Panel's review of theoretical issues (see below) related to cost recovery processes and alternate revenue models in other jurisdictions helped it to shape a number of specific recommendations, including that a more structured and transparent approach to determining whom should pay for the cost of particular services and activities can be established.

Recommendations

Recommendation 1: The Panel recommends retaining the existing PIRSA Cost Recovery Policy, and hence the activity-based attributable cost model, on the basis of it having a strong theoretical and policy rationale, and the strong support of industry.

Recommendation 2: The Panel recommends a 'revise and reset' process, that:

- addresses the range of issues with existing cost recovery policy, principles and implementation (revises); and,
- based on this revision, recalibrates cost recovery settings and charges (resets).

Recommendation 3: The Panel recommends that the 'revise and reset' process consider creating an aquaculture self-insurance fund, levied as a small percentage of GVP to provide a 'safety net' for at-risk aquaculture sectors.

Recommendation 4: The Panel recommends the Fisheries and Aquaculture Cost Recovery Framework document be revised and expanded to include a set of negotiated fisheries and aquaculture cost recovery principles, including making explicit that both user pays and risk creator principles are relevant to the recovery of aquaculture management costs.

The Fisheries and Aquaculture Cost Recovery Framework document be revised and expanded to include comprehensive guidelines on cost recovery implementation, including, but not limited to, the agreed attribution model and activity costing model.

Recommendation 5: To enhance transparency, the Panel recommends that PIRSA produce a single, annual, whole of agency, cost recovery implementation statement (CRIS) for the PIRSA Fisheries and Aquaculture Budget needs to be developed similar to that created by AFMA (See AFMA 2022-23 CRIS)

This CRIS should set out the proportions attributed to each sector (including the recreational sector in the case of fisheries, and the general public for both fisheries and aquaculture) for the entire PIRSA fisheries and aquaculture cost recovery budget (with supporting rationale from applying the cost recovery policy, principles and guidance developed through the 'revise and reset process')

The CRIS should include the attribution of activities and associated costs to the individual fisheries and aquaculture industries (with supporting rationale).

Recommendation 6: The Panel recommends an attribution model be developed that enables the structured and transparent attribution of services across beneficiaries and risk creators, and accounts for both administrative and economic efficiency.

Attributions should be revisited every three years and the attribution model be reviewed every five years.

Recommendation 7: The 'revise and reset' process should consider the appropriate use of levies (licence and lease fees) and fee-for-service to ensure the mix is consistent with any revised attributions and with the principles of efficient and equitable cost recovery.

Recommendation 8: The revised cost recovery framework should include a clear timetable for regular benchmarking of PIRSA and SARDI activities and costs.

Recommendation 9: The Panel recommends the establishment of an over-seeing 'cost recovery advisory body' charged with responsibility to consider and advise on broader sector-wide cost recovery policy, principles and implementation issues. The Panel notes the establishment of the new South Australian industry peak body and proposes this group work with PIRSA which may alleviate the requirement to establish another body.

Recommendation 10: A comprehensive cost recovery performance framework be developed and that the recommended revised CRIS (see Recommendation 5) report appropriate outcome, output and input performance measures.

Recommendation 11: The broader attribution of benefits arising from policing and enforcement activities should be further explored as part of the recommended 'revise and reset' process.

Recommendation 12: An independent review/benchmarking of PIRSA's compliance program and costs is undertaken as part of the 'revise and reset' process and that this include:

- Review of the compliance risk model and of the consultative arrangements to determine the risk profile for each aquaculture industry
- Assessment of the scope for using external compliance contractors for some more straightforward aspects of compliance (e.g., boundary checking, data confirmation)
- Assessment of other jurisdictional approaches to new technological opportunities for compliance delivery
- That, as part of the 'revise and reset' process, this review/benchmarking be paid for by government

Recommendation 13: A review of the compliance program and benchmarking of compliance costs is undertaken on a regular basis (3-5 years) and that these activities are cost recovered proportionally across sectors.

Recommendation 14: An independent review of PIRSA's research program and costs as part of the 'revise and reset' process is undertaken.

Recommendation 15: SARDI to produce fully-costed research on a project by project basis for each individual fishery's research program and then apply any State contributions, 'in-kind' contributions, and non-inclusion of overheads to provide full transparency.

Recommendation 16: A review of the science program and benchmarking of science costs is undertaken on a regular basis (3-5 years) and that these activities be cost recovered proportionally across sectors.

Introduction

Background

The State, on behalf of the community, is responsible for the management of natural resources within their legal jurisdiction. In the case of aquaculture in South Australia, this responsibility is defined by the *Aquaculture Act (2001)*. This confers responsibility for the management of these resources on the Department of Primary Industries and Regions (PIRSA). The legislation and related policies operate from the premise that South Australia's aquatic resources are owned by the State and managed by PIRSA on behalf of the South Australian community.

The need for management of publicly owned natural resources is well established. Left unmanaged, these resources risk overexploitation and the benefits that they could otherwise generate become dissipated. Over time, governments have sought to limit access to these resources through formal arrangements (e.g., licence and lease) to allow proper conservation and management measures to be implemented to protect resources from over-exploitation, ensure they are not endangered, are used efficiently and to ensure the community receives social and economic return from those who benefit from that limited access.

Different forms of revenue are raised by governments as part of allowing access to natural resources. These revenue raising activities take into account a range of factors including exclusivity of the access, renewability of the resource (or not), costs of management services, direct benefits to a particular sector and any community benefits arising from managing the commercial access to that resource. Revenue raising mechanisms can include (but are not limited to) taxes, fees, royalties and other charges dependent on government policy of the managing jurisdiction.

The South Australian aquaculture industry is one of the largest primary production sectors in South Australia. The South Australian *Aquaculture Act (2001)* is the only dedicated aquaculture legislation of its kind in the country. The Act provides that no one may conduct aquaculture in South Australia unless authorised to do so by an aquaculture licence.

South Australia has taken a strategic approach to regulation and seeks to proactively plan for the future growth and expansion of the aquaculture industry. While competition for, and access to, South Australia's natural resources is increasing, the Government is supporting the efficient and effective use of these resources through policies and planning and a one-stop-shop approach to aquaculture administration.

PIRSA manages the aquaculture industry through the development of aquaculture zone policies, maintaining requirements for aquaculture leases and licences and managing compliance with the general environmental duty and environment protection policies. There are currently 12 aquaculture zone policies within the South Australian jurisdiction.

Two types of aquaculture occur in South Australia:

- marine aquaculture (occurring in state waters) – which requires a licence and a lease
- land-based aquaculture – which requires a licence.

The South Australian Government introduced a Cost Recovery Policy in 2009 (PIRSA, 2020) to enable consistent decision making on the appropriate recovery of costs of services delivered by the Department of Primary Industries and Regions (PIRSA) across the portfolio, including aquaculture managed by PIRSA. The cost recovery policy is consistent with the

Australian Government Cost Recovery Guidelines (Department of Finance, 2022) and, with its predecessors, has been operating for approximately 14 years.

Under the policy any costs associated with government services that arise as a direct result of aquaculture access to these resources, are recovered from licence or lease holders through regulated fees. Services for which costs are recovered include, but are not limited to, program management, resource planning (identify areas and policies), leases/licences, legislation, business services, compliance, aquaculture systems, animal health and environment.

A review process, included when establishing the PIRSA cost recovery policy in 2009, is undertaken on a five-year cycle with the aim of ensuring best practice arrangements are maintained. The cost recovery process in aquaculture has been independently reviewed in each of 2009, 2015 and 2018. These reviews have typically focused on the existing system of cost recovery making incremental improvements to, or streamlining, the process or mechanics of the system rather than its inherent economic logic and the appropriateness of the model itself.

Irrespective of the findings of these past independent reviews, and the recent improvements in the cost recovery process, the Government is of the view that there remains significant and increasing challenges with the current process. In March 2022, the South Australian Minister for Primary Industries and Regional Development announced the Government's election commitment to undertake an independent review of the current aquaculture cost recovery policy/model to ensure it is sustainable and appropriate.

Establishing an Independent Review of Cost Recovery

In January 2023, the Minister established an Independent Cost Recovery Review Panel (ICRRP) to review PIRSA's current cost recovery arrangements in the aquaculture industry to ensure there is an objective process to provide advice to government.

The Panel was to report direct to the Minister.

The purpose of the Review is to provide advice to the Minister on the most appropriate, fair and equitable cost recovery arrangements for the aquaculture sector in South Australia.

The Panel comprised members with expertise in fisheries economics, management and commercial business practices:

- Brett McCallum (Chair) - fisheries management and commercial business expertise
- Dr Sarah Jennings - fisheries economic expertise
- Dr Sean Pascoe - fisheries economic expertise

Biographies of the Panel members can be found at [Appendix 1](#)

The Minister drafted Terms of Reference for the Review and circulated these to stakeholders for comment. As a result of responses received the Minister released Terms of Reference in early February 2023 for the aquaculture sector.

The Panel was asked to:

- Consider existing government cost recovery policies in the aquaculture sector in South Australia and review the current economic logic, consistency and transparency of the current cost recovery policy framework paying particular attention to the different resources involved and varying risk levels.

- Consider previous cost recovery review reports for aquaculture in South Australia.
- Consider alternative cost recovery processes and policies applied in other Australian jurisdictions and internationally to the aquaculture sector that are fair and equitable and assess these against current arrangements in South Australia:
- Invite submissions from the aquaculture sector, other interested stakeholders, PIRSA and other relevant government agencies: and,
- Consider any other matters considered relevant by the Panel or the Minister.

A copy of the full Terms of Reference can be found in [Appendix 2](#)

Independent Panel Process

The ICRRP utilised the following process when undertaking its functions:

1. A review of background information provided by PIRSA, SARDI, other aquaculture management jurisdictions, stakeholders and other reference material as sought including but not limited to:
 - PIRSA Cost Recovery Policy (May 2020)
 - PIRSA Fisheries and Aquaculture Cost Recovery Framework (May 2022)
 - Previous independent reviews of the South Australian Fisheries Cost Recovery Policy - 2009, 2015, 2018 and the Government responses to the reviews
 - SG Heilbron Report (in-confidence) – Fisheries review (2023)
 - SG Heilbron Report (in-confidence) – Aquaculture review (2023)
 - PIRSA cost recovery implementation statements for all aquaculture sectors– PIRSA website
 - Cost Recovery in South Australia Commercial Fisheries – Fisheries Management Paper No. 7 (D.Hall, October 1995)
 - Cost Recovery Policy Discussion Paper (May 2002) – Cabinet paper prepared by PIRSA Aquaculture
 - Cost recovery and other revenue arrangements for fisheries and aquaculture management jurisdictions including New Zealand, Australian Fisheries Management Authority (Commonwealth fisheries), Tasmania, Victoria, Western Australia, USA and Canada
 - Documentation supplied by PIRSA / SARDI outlining fisheries and aquaculture legislation and regulations, policy documentation, current management approach, activity cost attribution system, performance measures, compliance risk profiles, compliance reports, production figures, management objectives for each fishery, research costs, consultation arrangements and co-management
 - Documentation provided by stakeholder groups.
2. Individual licensed aquaculture companies, aquaculture industry associations and other stakeholders were provided the opportunity to submit written submissions against the approved Terms of Reference.²
 - The ICRRP wrote to all South Australian licenced aquaculture stakeholders on 10th February 2023 using the registered mailing list from PIRSA. The letter introduced the Panel and invited written submissions by close of business Tuesday, 7th March 2023.

² Note: The information that was provided by each organisation has been held in confidence and discarded when no longer required by the ICRRP.

- The ICRRP wrote to all South Australian aquaculture industry associations on 10th February 2023 inviting written submissions by close of business Tuesday, 7th March 2023.
 - An industry wide submission was received signed by all major aquaculture sector groups in South Australia. Two submissions were received from individual aquaculture industry associations in support of the industry-wide submission. Three submissions were received from individual aquaculture stakeholders.
3. Face-to-face consultation was held with nominated representatives of each aquaculture industry association in a group meeting:
 - In the letter of 10th February 2023 to the aquaculture industry associations the ICRRP invited two representatives from each association to meet with the Panel in Adelaide on 15th March 2023.
 - A total of three aquaculture industry associations attended the meeting held 15th March 2023.
 - One aquaculture industry sector attended an online meeting with the Panel held 31st April 2023.
 4. Face-to-face and online consultation was offered to aquaculture industry associations for individual meetings upon request:
 - In the letter of 10th February 2023 to the aquaculture industry associations the ICRRP were also provided the opportunity to meet the Panel individually on request.
 - One aquaculture industry association requested to meet individually with the Panel on the 15th March 2023.

Note: A summary of issues raised from Aquaculture stakeholder submissions and consultations can be found in [Appendix 3](#)

5. Face-to-face and online consultation with PIRSA, SARDI, representatives from other aquaculture management jurisdictions, academia and others as determined by the ICRRP.
6. A request for additional data, as required, was made by the ICRRP to government agencies, stakeholders, academia and others as determined by the ICRRP subsequent to consultations.
7. Preparation of the Final Report and submission to the Minister for Primary Industries and Regional Development.

Theoretical basis for cost recovery

Fisheries and aquaculture management is not costless, and who should pay for these costs, and how much, is an ongoing discussion in many countries. Some, or all, of fisheries and aquaculture management costs are recovered from the industry in several countries, including Australia, New Zealand, Canada, the United States, Iceland and Namibia (Arnason, Hannesson, & Schrank, 2000; McDonald, Mangin, Thomas, & Costello, 2016), and has recently been proposed for Scottish fisheries (Carpenter & Millar, 2018) and Forum Fisheries Agency Member States (i.e., Pacific Islands) (MRAG Asia Pacific, 2018).

The purpose in this section is to review the key drivers of cost recovery and the potential distribution of benefits deriving from fisheries and aquaculture management that may influence how management costs are recovered.

The policy environment

The principles underlying the appropriate approach to the recovery of the costs in the aquaculture (and other sectors) derives from a broader set of policy guidelines. Cost recovery policy generally starts with a rationale for why costs should be recovered, and higher-level objectives of the cost recovery process. Four general themes consistently emerge from the review of the key principles of cost recovery policies in other jurisdictions:

- Equity;
- Efficiency;
- Transparency; and
- Accountability.

although additional considerations are also often embodied in different jurisdictional policies.

For example, the Australian Government Cost Recovery Guidelines (Department of Finance, 2022) identify four key reasons to recover costs of government service provision:

- promote equity, whereby the recipients [beneficiaries] of a government activity, rather than the general public, bear its costs;
- influence demand for government activities;
- improve the efficiency, productivity and responsiveness of government activities and accountability for those activities; and,
- increase cost consciousness for all stakeholders by raising awareness of how much a government activity costs.

The aim of the Commonwealth cost recovery policy is to promote consistent, transparent and accountable charging for government activities and supports the proper use of public resources (Department of Finance, 2022).

How cost recovery is to be undertaken is also a policy consideration. For example, the Ministry for Primary Industries (2018), in their review of the New Zealand cost recovery system, identified four key desirable characteristics of a cost recovery system, namely that the system should be:

- Equitable – that is each group contribute to the costs in the proportion that they benefit or contribute to the risk (i.e., no cross subsidisation);
- Efficient – the process of cost recovery should not itself be costly to manage and implement, nor add to the cost burden of industry more than required to achieve the management objectives;

- Justifiable – the costs being recovered should be necessary in order to achieve the objectives of management; and,
- Transparent – the management costs, and the process of their attribution and allocation should be readily understandable by all parties.

These also largely align with the Australian Government Cost Recovery Guidelines (Department of Finance, 2022) as noted above.

These cost recovery principles are not necessarily mutually exclusive. For example, transparency requires each management activity to be identified as to its cost as well as establish its justifiability. Central to the efficiency and justifiability criteria is the need to relate the management action to the management objectives. This, in turn, requires management objectives to be clearly identified for each of the aquaculture industries, identifying ecological, economic and social objectives. Management objectives may be broader than identifying target stocking rates, and could, for example, consider broader governmental regional development objectives for aquaculture (e.g., maintain support for regional communities) or support for developing industries (e.g., new aquaculture ventures). These objectives will also help identify the key beneficiaries of management.

User pays and risk creator principles

Consistent with the above policy principles, the concept of cost recovery in aquaculture derives from the principle that the beneficiaries of government services should meet the costs of those services in accordance with the concepts of *user pays* (Cox, 2000) and *risk creator pays* (Harte, 2007). In the case of the latter, the rationale is that in the absence of an aquaculture industry, there would be no need for management of the marine waters and associated risks, and hence the aquaculture industry is the creator of the risk and subsequently should internalise the costs of its management. In contrast, the user pays principle suggests that the costs of management paid by the aquaculture industry should be proportional to the benefits received.

In Australian fisheries and aquaculture management, these two concepts have largely been conflated. As a result, in jurisdictions where costs are recovered, the aquaculture industry generally is generally attributed (much of the) costs considered to be directly related to its existence, while the government pays for activities that may benefit the broader community (Cox, 2000). Identifying the appropriate proportion of the costs that relate to benefits to the broader community, however, is becoming increasingly difficult as managers are faced with an increasingly diverse and complex set of social, cultural and environmental objectives (Harte, 2007). Incorporating social considerations into management (e.g., regional development goals) may result in actions that are not of benefit to the aquaculture industry and may even reduce the economic efficiency of the industry, for example by increasing costs if the industry is encouraged to operate in remote regions with subsequent higher transportation costs of inputs and also higher costs of getting outputs to the main markets. Identifying clear and explicit objectives of aquaculture management and their relative importance is essential to identifying key beneficiaries and their expected share of benefits as cost recovery requires.

Linking management actions to management objectives is necessary to determine if the user pays or risk creator pays principle should apply to cost recovery. For example, a management action related to a conservation objective that is only necessary due to the way in which the aquaculture industry operates (e.g., the requirement for electronic monitoring to monitor threatened, endangered or protected species interactions) may be considered a “risk creator” action, and hence it is reasonable for the industry to pay the costs of this specific action. Management actions related to social considerations such as regional development or new industry development, however, are aimed at a broader set of objectives with multiple beneficiaries.

Potential benefits and unanticipated consequences of cost recovery

Cost recovery is assumed to lead to improved efficiency in management. Paying the costs of management motivates the aquaculture industry to demand cost effective management and stronger property rights, and hence incentives for managers to adopt cost effective management (Kaufmann & Geen, 1997). In the absence of cost recovery, there may otherwise be a tendency to inflate management services and information/monitoring data collection that may not be economically justifiable.

How cost recovery is applied may change these incentives, and hence a divergence between aquaculture objectives and implemented management options. The *risk creator pays* argument is that these management costs would not be required if the aquaculture industry was not there, so the industry should pay the costs of management. The *user pays* argument is that these costs should be paid in proportion to the benefits received.

Getting this balance right is important. For example, if industry has full control over the direction of management, the focus is likely to be fully on improving their economic outcomes. This may be at the expense of other social benefits or environmental impacts that may be otherwise realised. Conversely, if the community (via government) paid the full costs (or a disproportionate share), there is a risk that management services would be overinflated and not aligned to the needs of the industry. Where the management objectives for an aquaculture industry aim to get the balance right the community should also contribute to management costs. As noted above, clear and explicit management objectives and their relative importance need to be established against which any management plan or action can be assessed, and beneficiaries identified.

What proportion of management benefits accrue to the aquaculture industry?

Most previous considerations of cost recovery in marine resource management have focused on commercial fisheries. Under the user pays concept, the key consideration is the proportion of costs that fisheries should be required to pay is the share of total benefits accruing to fishers. Earlier studies on the beneficiaries of fisheries management (Haynes, Geen, & Wilks, 1986) considered only the relative share of benefits between consumers and fishers. Haynes et al. (1986) argued that the demand for fish products in Australia is highly elastic³, and hence most, if not all, of the benefit of fisheries management accrues to fishers.

These arguments can also be extended to aquaculture industries. Aquaculture, aimed at supplying the domestic market, will benefit consumers through lower prices and the greater availability of product. The extent of this benefit will depend on the share aimed at the domestic market, and the relationship between price and quantity supplied (i.e., the price flexibility). In cases where prices are highly inflexible (i.e., do not change with the level of production), then benefits will largely only accrue to the aquaculture producers themselves. In contrast, when prices are highly flexible, consumers may also receive benefits.

More recent empirical analyses suggest that, even with moderate to highly inflexible prices, consumer benefits from expanding aquaculture production can be substantial. Based on price flexibilities for domestically landed fish and prawn species in other States, consumers may receive between 30% to 50% of the total benefits generated through aquaculture production (see [Appendix 4](#)).

³Price elasticity is a measure of the percentage change in quantity demanded given a 1% change in price. A related concept is price flexibility, which is the percentage change in market price given a 1% change in quantity landed. Demand is said to be elastic if the elasticity has a value greater than one. Perfectly elastic demand has an elasticity of infinity. As there is an inverse relationship between price elasticity and price flexibility, perfectly elastic demand corresponds to perfectly inflexible (i.e., constant) prices.

Haynes et al. (1986) recognised the potential for other non-market benefits from fisheries management which could also potentially apply to aquaculture. Studies on the social licence to operate have established that Australian communities want sustainable fisheries for the community benefits they also generate (e.g., Cullen-Knox, Haward, Jabour, Ogier, & Tracey, 2017; Kelly, Pecl, & Fleming, 2017), while studies elsewhere have established that the interconnection between healthy fisheries and healthy communities provides social and cultural value (e.g., MacDonald, Murray, & Patterson, 2015). These benefits could equally apply to sustainable aquaculture production. Similarly, Alexander (2022) established that social licence to operate in aquaculture was largely underpinned by sustainable practice, and was also dependent on the sector contributing to the local economy through employment. Baines and Edwards (2018) found that social licence to operate in the aquaculture sector could be actively developed by the industry through its engagement with the local economy and community to offset potential negative perceptions.

This value may also manifest itself as the willingness to pay for locally produced seafood from sustainable fisheries (e.g., Fonner & Sylvia, 2015; McClenachan, Dissanayake, & Chen, 2016) and may apply to aquaculture although not established per se. Pascoe, Paredes, and Coglan (2023a) estimated that Queensland consumers were willing to pay on average an additional 12% of the market price of fish to ensure it is harvested sustainably, and between 7% and 15% more if it is produced “locally”, with the higher level observed in coastal communities with a closer relationship to the fishing industry. In the case of the latter result, Paredes, Pascoe, Coglan, and Richards (2021) found that a key driver of the additional value of “local” seafood was the desire to support local industries, consistent with the principles identified by Alexander (2022) underpinning social licence to operate for aquaculture.

Whether or not the “sustainability premium” attached to wild-caught fisheries also applies to aquaculture is not certain. There may be an assumption that the activity must be sustainable in order to have been licensed to operate in the marine environment. The validity of this assumption, however, is debatable. Adverse environmental experiences with Tasmanian Salmon production may have eroded this perception more broadly (Cullen-Knox, Fleming, Lester, & Ogier, 2021), impacting community perception on other aquaculture activities. Further, the publicly-owned resources being used by the sector differ to those used in commercial fisheries (i.e., access to clean water compared with a fish stock, although in some cases broodstock may be extracted from the wild-caught fishery), while other sustainability issues exist in aquaculture that do not occur in a wild-caught fishery (e.g., the sustainability of the feed, pollution from the cages, habitat impacts etc) so the sustainability premium may be less assured. Bronnmann and Asche (2017) found that aquaculture products generally received a lower price than their wild-caught equivalent because of their perceived greater and broader sustainability issues. However, sustainably certificated aquaculture received similar prices to certified wild-caught produce, suggesting that sustainable management of the sector can still provide similar benefits to sustainable fisheries management (Bronnmann & Asche, 2017).

While similar studies have not been undertaken in South Australia, based on these other fisheries-focused studies, it may be reasonable to assume that sustainably managed aquaculture businesses supplying the domestic market and supporting local businesses provide benefits to consumers and the community. From the fisheries related studies cited previously, these may amount to between 29% and 37% of the value of output, with the higher value accruing in more isolated coastal communities. For export-oriented fisheries that do not supply the domestic market (and hence do not produce consumer benefits), their sustainable management may still generate around 12% of the value of output as non-market benefits to the broader community. These benefits are substantially greater than those initially envisaged by Haynes et al. (1986) for wild-caught fisheries.

The existence of aquaculture in a coastal region has other benefits. In particular, the ability to eat local seafood and see the infrastructure that produced it has benefits to the tourism sector.

Kim, Duffy, Jodice, & Norman, 2017) established a positive relationship between aquaculture and “culinary tourism” opportunities in coastal communities, as well as providing a potential direct tourism attraction (Mohammadi, Bhati, & Jerry, 2022).

Multiple studies have identified the regional economic impact of aquaculture through flow-on effects related to their purchase of inputs from local suppliers. For example, (BDO EconSearch, 2021) estimated that the indirect economic impact of aquaculture on the South Australian State and regional economies in 2019-20 may be greater than the gross value of product. Similarly, processors, wholesalers and retailers have also been identified as potential beneficiaries as, without aquaculture, they would not have a key input into their business. (BDO EconSearch, 2021) estimated that “downstream” impacts (i.e., processors, wholesalers and retailers) related to aquaculture in South Australia may be roughly one quarter that of the direct value of aquaculture production.

The extent to which these benefits need to be considered from a cost recovery perspective, however, again depends on the objectives of aquaculture management. If an explicit objective of management is to, say, maintain or enhance regional economic activity, then these benefits may be considered an explicit outcome of the management activity and hence there is an argument that, as beneficiaries, these communities should also contribute to the costs of this management. Recovery of these costs, however, is problematic as individual beneficiaries are difficult to identify. In this case, an argument may be made for additional government support to cover this cost share. However, if there is no specific objective relating to these outcomes, then these benefits arise as a positive externality associated with the aquaculture activity and should not form part of the cost recovery considerations.

Similarly, tourism benefits are also likely to be a positive externality in the absence of any specific aquaculture management objective to support this sector.

What about policy development?

Aquaculture management plans are usually underpinned by government policy and legislation, which determines higher level objectives as to how the marine resources are to be used. These largely embody the community’s expectations about the use of their resources are delivered through government policy which may prescribe who can access the resource (e.g., commercial aquaculture), the conditions under which access is allowed (e.g., licences, leases and associated fee/charges) and overarching objectives reflecting social values (eg sustainability). In this regard, the sustainability and other objectives subsequently imposed on management reflect the broader values of society.

As such, the main beneficiaries of policy are the general community, and the costs of such policy development should be borne by the general community. In this regard, we distinguish between management, which directly affects the activities of the industry, and policy, which represents societies expectations about the use of the marine resources.

Compliance and enforcement costs – user pays or risk creator approaches?

The classic model of compliance assumes that the level of compliance is determined by a combination of the risk of detection (e.g., through random inspection) and the penalty if caught (Stigler, 1970), and there is some evidence to support this model in relation to compliance with environmental regulations (Gray & Shimshack, 2011) which more directly impact the aquaculture industry. Heyes (2000) suggests that this model, however, creates additional incentives for individuals to avoid detection, provided that the cost of the avoidance activities is less than the expected cost associated with detection. Other fisheries-focused studies have found that perceived legitimacy of the regulation and social norms also influence the decision of individuals to comply with fisheries regulations (Hatcher, Jaffry, Thébaud, & Bennett, 2000; Oyanedel, Gelcich, & Milner-Gulland, 2020). Arnsten and Hoff (2022) found similar drivers of compliance for Norwegian aquaculture. Given this, compliance does not necessarily correspond with the level of enforcement activities.

There is existing literature on compliance and enforcement of environmental regulation that assumes that government is responsible for these costs, and the emphasis is on developing systems that ensure compliance that minimises these costs (Gray & Shimshack, 2011; Heyes, 2000; Stigler, 1970). However, McDonald et al. (2016) argue that recovering enforcement costs from the target industries not only increases the financial resources available for enforcement, but reduces the burden of cost to non-benefitting community members and creates incentives for industry members to demand efficiency in the enforcement services they are funding. Reconciling these different views hinges on the objectives of compliance cost recovery, the objectives of management, and the extent to which society values the public good element of the rule of law.

Under a user-pays (or beneficiary pays) approach, compliance and enforcement costs are difficult to allocate. The aim of enforcement is to ensure that the objectives of management are achieved by ensuring that the regulations imposed to achieve these objectives are complied with. From a beneficiary pays perspective, effective management provides benefits to a wide number of users, including the aquaculture industry (who benefit by ensuring preferential access to quality water areas), consumers (who benefit from a sustainable supply of seafood) and the general public (who benefit by ensuring that their resource is protected, and economic objectives realised). In this regard, enforcement has many public good attributes, as the results of efficient enforcement are non-rivalrous (benefits received by one group of stakeholders does not diminish the benefits received by others) and non-exclusive (different stakeholders cannot be excluded from receiving the benefits).

Activity-based cost allocation (i.e., number of inspections in an aquaculture sector or days on the beat) do not reflect the broader set of beneficiaries of compliance, which extend beyond the sector being inspected. Risk-based inspections may improve the efficiency of the enforcement activity in terms of detection rates, and individuals caught infringing the rules are sanctioned directly. Effective enforcement activities in one sector, however, may also encourage greater compliance in others, again resulting in benefits beyond the targeted aquaculture industry.

Given the public good nature of compliance, the associated difficulty in attributing benefits of compliance activities to particular groups and the individual, rather than sectoral, nature of risk creation, there are arguments supporting the spreading of compliance costs across a broader group of stakeholders.

Beneficiaries of aquaculture research

While research related to supporting management primarily benefits those in the aquaculture industry, the research also may have direct use outside the aquaculture industry.

Research and monitoring are not the same thing. Research has a strong public good element. Monitoring can be considered related to research (in that it provides data) but these data can also be used for other research purposes.

Research in many instances is considered a public good as, once undertaken, the results are non-rivalrous (i.e., use by one group does not diminish its availability for use by another group) and non-excludable (i.e., the results are available for all potential users to use).⁴ For instance, ecological research and habitat assessment may be of interest to other biological researchers, conservationists and local environmental groups (Arnason, 2000). It may also be of benefit to other government management agencies (e.g., those responsible for the management of marine parks, offshore energy, oil and gas, and threatened species); the energy sector (e.g., oil and gas, renewable energy); ports and shipping; and regional development groups responsible for coastal development. Given the benefits communities receive by i) having an aquaculture industry and ii) ensuring it is operating sustainably, research directed at ensuring these is also of direct benefit to the broader community.

Given the public good nature of research there is an argument, then, that the public, via government, should also contribute to research directly supporting aquaculture management. While these other uses of the research could also be considered positive externalities, Squires, Clarke, and Chan (2014) notes that failure to recognise the public good nature of fisheries and aquaculture research may result in its undersupply, justifying the use of public subsidy. This is largely recognised in Australia through the funding of research via the Fisheries Research and Development Corporation (FRDC), to which the fishing and aquaculture industry contribute 0.25% of their average Gross Value of Production (GVP) and the Australian Government contributing a further 0.25% of the average GVP to fund public good RD&E. While these funds are not used for tactical research purposes (e.g., routine lease area assessments), which are primarily jurisdictional responsibility, such projects may also exhibit public good characteristics as identified above. In South Australia there are FRDC funded Industry Partnership Agreements across several major aquaculture sectors where industry contributions (0.25%GVP) are matched by the Australian government (0.25%GVP). The IPA funding arrangements do not automatically receive a portion of the 0.5%GVP public good funding from the Australian Government, but, this is available for collaborative RD&E projects with non-IPA fisheries or cross-sector, higher level fishery non-specific RD&E (eg., climate change).

Given the non-rivalrous nature of aquaculture research, quantifying the distribution of the benefits for the purposes of cost attribution is not straightforward. In the first instance, the aquaculture industry and general public are the primary beneficiaries of research relating to the proper use of the resource (marine waters and any local species accessed for broodstock). Attributing too high a proportion of these costs to the industry may have unintended consequences. For example, while cost recovery is considered essential to engage the aquaculture industry in the management process, Stokes, Gibbs, and Holland (2006) warns that high-quality research largely funded by the industry can contribute substantially to industry objectives, but may not help move the sector towards other societal objectives. As a result, Stokes et al. (2006) considers as essential greater public funding of marine research (although not as an alternative to industry paying its share) and improvement of government planning

⁴ This may not apply to private research undertaken by the producer in terms of developing more efficient production methods, although in many cases this may also have public good attributes.

processes to provide clear linkages between fisheries-management needs and all required research.

Charging mechanisms available for collecting licence/access fees

The Australian Government Cost Recovery Guidelines (Department of Finance, 2022) identify five different types of government charging mechanisms:

1. Commercial charges based on market rates for provision of services by government business enterprises;
2. Cost recovery fees that reflect the cost of provision of a particular service to an identifiable individual (e.g., fee for service such as issuing a licence or lease);
3. Cost recovery levies to recover costs of providing a service to a group of individuals (e.g., most management services);
4. Fines or monetary penalties which may or may not relate to a specific service but aimed at discouraging an activity by industry; and
5. Taxes and royalties, which are not related to the costs of service delivery but aimed at raising revenue.

In terms of cost recovery, the Australian Government Cost Recovery Guidelines (Department of Finance, 2022) suggest that only cost recovery fees and levies (types 2 and 3) be applied. Similar views are expressed elsewhere. For example, in New Zealand, a general preference among the finance and treasury agencies is for explicit cost recovery mechanisms rather than sector-specific taxes that are potentially punitive and inefficient (Harte, 2007). These charging mechanisms are consistent with ensuring that the principle that the beneficiaries of government services should meet the costs of services in accordance with the concepts of *user pays* and *risk creator pays*.

Is there a role for resource rent charges, community returns and royalties?

The Australian Government Cost Recovery Guidelines (Department of Finance, 2022) note that the use of taxes, royalties or similar resource access payments (such as a charge levied as a percentage of industry GVP) to levy income are not appropriate as a cost recovery mechanism and would not satisfy the overall objectives of cost recovery as set out in both the Australian (Department of Finance, 2022) and South Australian cost recovery policy and guidelines. These mechanisms are more usually used to raise revenue for specific purposes (e.g., contribute to an industry buyback (Holland et al. 2017) or research (Alston et al. 2004)), but can also be considered as mechanisms for collecting resource rent from resource users on behalf of the community who own these resources.

Resource rent is a measure of the value of the ecosystem service provided by the marine environment in the production of the aquaculture output. In the absence of management, this resource rent is dissipated, and the aquaculture industry receives what is known as normal returns. Where there is effective management, the industry receives a return that is larger than this normal return, and is known as resource rent, noting that the existence of resource rent is a function of both the ecosystem service provided by the resource and the effectiveness of management. The resource rent charge represents a community return for the use of this publicly-owned ecosystem service.

The value of the resource rent is generally considered as the difference between the level of revenue and the costs of all physical inputs into the production process, including an implicit value for non-paid labour and a normal return on capital (Figure 1).⁵ If management costs are

⁵ A range of other forms of rent also exist relating, for example, to the location of the operation (Coglan & Pascoe, 1999). For simplicity we ignore these in this section.

not recovered, these are also captured in the measure of firm profits. The residual, after management costs and normal returns are deducted, is generally considered to represent the level of resource rent generated. However, resource rent can only be generated through effective management, and as a result, some of the value can also be considered a return to the management initiatives that enable this resource rent to be generated. These management returns are over and above the costs of management delivery (i.e., costs recovered), and could be considered “profit” of the management entity if provided through a market. Separating the returns to management and resource rent components, however, is complex, and the former is usually considered to be implicitly included in the latter.

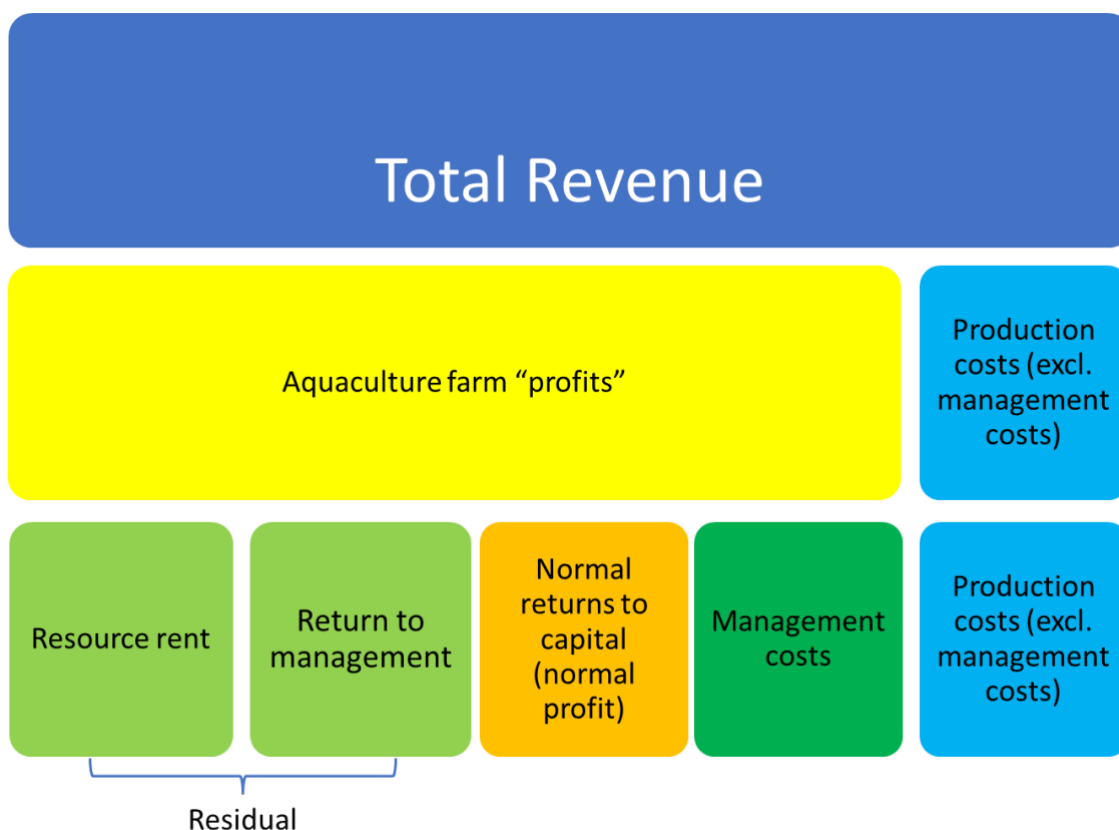


Figure 1. Components of aquaculture profit

The collection of some, or all, of the residual generated in the sector can be considered an explicit community return for the use of the publicly owned marine resource (as well as a return on the management services provided). In theory, the use of charges to extract resource rent can result in an efficient level of production and input use (e.g., Anderson, 1986; Androkovich & Stollery, 1991; Scott, 1979).

Resource rent charges are applied to the minerals and energy sectors in Australia through the Commonwealth Minerals Resource Rent Tax (MRRT) (now abolished) and the Petroleum Resource Rent Tax (PRRT), based on a share of their profits. For example, the former Commonwealth MRRT aimed at collecting 22.5% of above normal profits (Australian Tax Office, 2016), while the PRRT is levied at the rate of 40% on the taxable profits (Australian Tax Office, 2020). In addition, these sectors are also subject to State based royalties paid as a percentage of the value of production. For example, Queensland imposes a variable royalty rate on coal ranging from 20% to 40% depending on the price of coal (Treasurer and Minister for Trade and Investment, 2022).

The use of royalties (e.g., percentage of GVP) to collect a community return can be distortionary if not directly related to the level of resource rent generated (Mayo, 1979). That

is, they may adversely influence the flow of investment into the sector if the proportion of rent extracted is considered too high.

Charging for access to the resource is another form of resource rent collection, although this is not necessarily linked with the level of rent generated by the aquaculture business. Charging foreign fishing fleets fees for access to domestic waters is common in many countries and is a major source of foreign currency (e.g., Belhabib et al., 2015; Bell et al., 2021). In Australia, aquaculture is often subject to lease payments reflecting, amongst other things, the value of the water resources that they are using in their production.

Resource rent charges and the recovery of management costs from resource users are not mutually exclusive. As the level of resource rent generated is also a function of the efficiency of management in achieving economic outcomes, the resource rent is net of the cost of this management activity (Figure 1), and hence management costs can still be recovered separately. Where tax or royalty charges have been applied to aquaculture however (e.g., Norwegian Salmon (Office of the Prime Minister, 2023)), these funds have also been used to cover the costs of management and there is no additional cost recovery arrangements applied. These resource rent charges presumably exceeded the management costs in order to also provide a community return.

In the case of land-based aquaculture, this resource rent has already been capitalised into the value of privately-owned land. As the land is not a publicly owned resource, a resource rent charge is not applicable. For marine based aquaculture, some level of resource rent is likely being captured through the lease fees. The extent to which these lease fees reflect the level of rent generated is uncertain.

Income tax as a mechanism for community return?

All individuals and businesses in Australia are subject to income tax. Income tax is based on the gross revenues less the costs incurred in undertaking the economic activity. For a business, this represents the profit earned. An argument sometimes put by industry is that a return to the community for publicly owned resources is captured in the income tax paid on the higher level of profits arising from the resource use. This is then returned to the community for the provision of services such as health, education and other services that are supported by government expenditure.

This argument is attractive, but potentially may be distortive. The marine waters lease and access to broodstock are inputs into the production process the same as any non-resource input, such as fuel, feed and other capital costs. These non-resource inputs are not provided free to the aquaculture industry with a return on their use captured through taxation. By not explicitly identifying and accounting for the value of the marine waters lease and access to broodstock used in aquaculture production, there is a propensity to overuse the resource (as would be the case for any subsidised input).

Income and company tax is a means to raise revenue for the provision of a wide range of government services and investments. It is the individuals' and the companies' contribution for the use of, or access to, these services and investments. Returns on government investments also contribute to this revenue separately, as do (in the case of the minerals and energy sector) returns on the use of community owned natural resources.

Further, income and company taxes are received by the Commonwealth Government, with income being redistributed to the States. This creates an additional disconnect between the areas in which the resource is exploited and where the returns are collected. For the minerals and energy sectors (which are also subject to a separate resource rent tax as well as company tax), State governments also charge some form of royalty to ensure that returns directly accrue to the communities in which the resources are extracted.

PIRSA Aquaculture Cost Recovery Process

The South Australian *Aquaculture Act (2001)* includes objectives as follows:

- to promote ecologically sustainable development of marine and inland aquaculture
- to maximise the benefits to the community from the state's aquaculture resources
- otherwise to ensure the efficient and effective regulation of the aquaculture industry.

However, the Aquaculture Act does not have an objective for targets to be set for the recovery of management costs as is the case in the South Australian Fisheries Act (2007)⁶.

PIRSA cost recovery principles

The PIRSA Cost Recovery Policy (PIRSA, 2020) encompasses the principles embodied in the South Australian Aquaculture Act (2001). These are largely consistent also with those principles included in the Australian Government Cost Recovery Guidelines (Department of Finance, 2022) as well as the other jurisdictions noted in previous sections.

Principle 1 establishes that charges should recover all costs of services where it is efficient to do so, although partial cost recovery may be appropriate when there are government-endorsed community service obligations or explicit government policies that support partial recovery. Cross-subsidies should be avoided, unless there is an explicit decision of the government to cross subsidise – for example, in order to pursue equity or social policy objectives. Principle 4 ensures that there is legal authority of PIRSA to collect these charges while Principle 9 ensures that the arrangements are consistent with SA legislative and policy requirements.

Principle 2 of the policy notes that full cost recovery may not be appropriate if the industry does not have the ability to pay these costs.

Principles 3 and 5 note that any charge should reflect the costs of providing the product or service and should generally be imposed on a fee-for-service basis or, where efficient, as a levy. Costs that are not related or integral to the provision of products or services (e.g., some policy and parliamentary servicing functions, including fundamental development and review of government policies – including regulatory and information services) should not be recovered. Principle 6 is that where possible, definable activities should be grouped and shared across individuals within an industry group (e.g., biosecurity, research).

Principle 7 states that the approach to cost recovery should align with the key principles of the Australian Government Cost Recovery Guidelines and recognise:

- Efficiency and effectiveness;
- Transparency and accountability;
- [involve] stakeholder engagement; and
- [undertake] policy review.

Transparency is established in Principle 8 through the development of Cost Recovery Implementation Statements (CRIS) and Principle 10, which requires stakeholder engagement to negotiate these costs.

Finally, Principle 11 requires that all arrangements will be monitored and periodically reviewed.

⁶ S7(3), South Australia Fisheries Management Act 2007 (Published under the *Legislation Revision and Publication Act 2002*)

Cost recovery policy development over time

The Panel was provided with a copy of an historical document titled *Cost Recovery in South Australia Commercial Fisheries – Fisheries Management Paper No.7* (Hall, 1995). This document provided a reasonable history of the establishment of cost recovery in South Australia. While commercial fisheries focused, the principles can be considered to be equally applicable to aquaculture.

In July 1992 the South Australian Fishing Industry Council (SAFIC) and the Department of Fisheries agreed a number of principles for cost recovery. The general principle was that service recipients pay a fee for government services equivalent to the cost of activities for which direct benefits were received.

These principles were tied in with a broad agreement for the commercial, recreational fishing and aquaculture industries to have joint responsibility with government for managing the State's fisheries and aquaculture industries including the funding of government services through licence fees. A specific meaning of joint responsibility was not provided.

A summary of the main principles in the management paper were as follows (noting the fisheries-focus of the paper) but the document included the aquaculture sector:

- Government should support the fishing and aquaculture industry to an extent equal to that support provided to other primary producers (e.g., agriculture).
- A long-term strategic plan should be developed for each fishery and its associated costs centres.
- Once management and resource management plans are developed and approved a mechanism for contracting out should be agreed upon.
- Given the monopoly power of the managing agency there must be a high level of consultation with industry.
- A zero-based budget approach is to be adopted on an annual basis and define what costs would apply if fishing did not exist.
- Separate costs to be determine for resource management costs (what amount of fish, caught by whom) vs industry management costs (how fish are caught).
- Users will pay on a fee-for-service basis where the benefit is clearly defined.
- All costs attributed to any fishery must be fully considered by the relevant fishery management committee which will make recommendations to the Minister for Fisheries regarding expenditure for the fishery.
- Recoverable costs to be determined to the satisfaction of the industry representatives for a particular fishery.
- Commercial sector will not bear the costs of management for the recreational sector.
- Where a research component assists a resource accessed by both recreational and commercial fishers, a proportion of that research cost must be set aside for the recreational sector and not recovered from the commercial sector.
- The costs of social justice are to be borne by government. That is, the fishing industry has a legitimate expectation to be protected by government from adverse outside influences just as every citizen has a right to be protected from theft and assault in the street
- Government has a responsibility to manage the resource (and the costs) even if there are no fishers (e.g., collapsed fishery). This was labelled a 'benchmark responsibility'. Costs may be recouped when industry/fishery becomes sufficiently viable.
- Some costs (e.g., pollution, exotic species etc) are for protection for other sectors than fishing and should be set aside and not recovered from the commercial fishing sector.
- Industry will only participate with a higher financial input where it can have a major input into a review of current administrative structure with a view to achieving high level

costs effectiveness. (e.g., consideration should be given to an alternate form of management structure involving much greater industry participation).

Hall (1995) also set out a range of mechanisms to recover the costs considered by PIRSA and industry in 1992 including:

- A cost attribution model. This was found to:
 - provides a strong base for ensuring efficient and accountable government services
 - involves agency negotiating with each industry sector over departmental cost centres and budgets each year
 - one criticism is that there is no correlation to an industry sector's capacity to pay (e.g., MSF)
- Percentage of gross value of production method (%GVP). The potential issues associated with this were:
 - Uses the value of production to determine fees, not actual service levels and costs
 - Is therefore a community return not cost recovery
 - Does take into account capacity to pay but this is distorted by having no lens on costs of fishing in any sector
 - Would result in some reductions in fees for industries where there is high level of resource rent (e.g., abalone) which is inequitable
- Percentage of gross goodwill value of licences method (%GVL)
 - Recognises rent is capitalised in the form of transferable licence prices
 - Is therefore a community return, not cost recovery
 - Difficulty in accurately determining licence values in a sector

The outcome in 1992 of industry and government considering these various mechanisms was to support the '*cost attribution model*' rather than any form of '*access/community return*' model considered at that time.

However, at the same time, the Government established an 'integrated management committee contingency fund', together with the 'fisheries development fund' (Hall, 1995). All commercial industry sectors contributed towards these funds through application of a set percentage of their individual fishery Gross Value of Production (GVP). These 'contingency funds' were to be used to improve the economic performance of a fishery by assisting those industries experiencing difficulties in meeting cost recovery levels or generally unable to amass sufficient funds for required rationalisation (i.e., effort reduction or fishery restructure). The Minister was required to consult with industry before these funds were expended. Over time, as overall profitability in each fishery improves, it was expected that this fund would no longer be needed⁷.

In early 1994, further negotiations were held in an effort to reach agreement on attributable cost and required services. These negotiations resulted in agreement that 56% of recurrent expenditure on services was to be recovered from the commercial fishing sector, 18% from the recreational sector, 14% from the aquaculture sector and 12% was attributed to public good.

⁷ The Panel was unable to confirm the establishment of these contingency funds and, if established, what is the current status of these funds (i.e., whether they still exist and where any of the fund balances are now held).

It was also considered that there should be a performance measuring review for the research and compliance activities before additional funds were provided from levies or from general revenue.

Hall (1995) set out that in 1995/96, PIRSA recovered 100% of attributable costs from the commercial sector and less than 25% of attributable costs from the aquaculture sector. However, with aquaculture in the development stage, government policy delayed full cost recovery being progressed immediately in this sector.

In 2002, a PIRSA discussion paper was prepared for Cabinet proposing that full cost recovery (100% of attributable costs) should be applied in the aquaculture sector with this to be phased in over 5 years. This paper was comprehensive in its coverage of how cost recovery should be applied to aquaculture and, among other things, set out a clear framework for determining the attribution of costs across beneficiaries. PIRSA also noted in the discussion paper that the proposed differential fee treatment of developmental and production leases should avoid full cost recovery being a disincentive to potential start-up companies in the aquaculture sector.

Activity based cost recovery was introduced to the aquaculture sector in 2008⁸. In 2009, PIRSA developed the first formal Cost Recovery Policy containing a range of general, costing and pricing principles (PIRSA, 2020), and applying across its entire portfolio. The Panel sought copies of cost recovery policies between 1995 and 2009 but were told by PIRSA these were archived and difficult to access. PIRSA advised the Panel that the cost recovery policies at the time were relatively consistent from 1998 through to 2009.

Previous cost recovery reviews

Over time there have been several Independent Review Reports into the PIRSA cost recovery arrangements as applied to aquaculture. The ICRRP has considered the independent review reports from 2009, 2015 and 2018 and noted that these reports:

- identified issues and recommended improvements in the cost recovery process; and,
- tracked the progress made by government through the years in implementing the respective independent review recommendations.

The various report findings and government actions provided the ICRRP the opportunity to assess the progress of cost recovery in aquaculture over the years.

In 2009, the independent review findings/recommendations included:

- That the Fisheries Council process to review cost recovery activities (membership of which included an independent chair, industry and government) gave confidence to stakeholders that policy principles were being applied appropriately.
- Need for better recognition of the degree to which activities (e.g., research) undertaken as part of commercial fisheries management (and paid for by the commercial sector) may provide benefits to recreational fishers or the community more broadly or provide information to facilitate other activities or other spill-over benefits.
- There is very limited transparency around the costs, and what activities these relate to, specifically in regard to regulation of recreational fishers, management of the resource for indigenous users and the benefits to the broader community.
- That regular benchmarking analysis (perhaps every 3-5 years) of PIRSA regulatory and SARDI research costs (and making the results publicly available) would improve transparency and ensure regulatory costs are efficient.
- If a small commercial fishery is allocated higher research costs, it may make the fishery uncompetitive (or unviable). Government may then choose to further intervene in the market to support funding - at least there would have been a clear

⁸ PIRSA submission to Productivity Commission Review of Cost Recovery (2016)

and transparent decision-making process supporting this intervention. This was applied to aquaculture but not made transparent up front.

- Overall, the review concluded the cost recovery framework appears to be consistent with PIRSA's cost recovery principles and appears to be allocating costs between commercial fisheries, aquaculture and other sectors in a reasonable manner.

In 2014, PIRSA updated its Cost Recovery Policy for consistency with the newly released Australian Government's Cost Recovery Guidelines (2014).⁹ The updated PIRSA's Cost Recovery Policy (2014) noted that overhead or corporate costs should be recovered, provided they can be '*reasonably attributed to the provision of the product or service*'. Corporate services were not charged to industries as part of PIRSA's model nor were asset or shared services costs.

The 2009 review found that PIRSA continued to apply less than full cost recovery in the aquaculture industry (by excluding indirect and corporate costs) as government was of the view there was no capacity of licence holders to pay 100%. This policy decision to not apply full cost recovery (and therefore absorb costs through the South Australian Government) was seen to be consistent with Principle 2 of PIRSA's *Cost Recovery Policy*; however, the Review advised that best practice was to be transparent and provide information regarding the reasons for these exclusion decisions.

It was also noted in the 2015 Review that the South Australian Government and aquaculture licence holders equally share the cost of biosecurity and surveillance. However, it was not clear at the time to the Reviewers how this was done. Information provided by PIRSA at the time indicated that the division of costs was based on an analysis of which industry group gives rise to regulation and who benefits from each activity.

The Review found that the aquaculture cost recovery model is simpler and allocates all costs (excluding indirect and corporate services) directly to industry sectors based on the proportion of FTE time spent on that industry during the year (based on timesheet data).

At the time different aquaculture industries were charged different types of fees, as follows:

- Licence fees: Paid to PIRSA for the right to undertake certain activities at a lease site. Licences govern operation/activity of aquaculture with conditions that dictate operating requirements, including mitigation requirements based on ESD risk assessment (e.g., farming structures, species, biomass restrictions, and environmental monitoring). Licence applications are referred for approval to the Environment Protection Authority
- Lease fees: Paid to PIRSA for exclusive use of an area of State waters/seabed for aquaculture purposes. Lease are issued on a competitive allocation process within aquaculture zones. Conditions include site rehabilitation and navigation. Leases are referred for the agreement of the Minister for Transport
- Hectare fees: Paid to PIRSA for each hectare of water operated by a licence. This approach is applied to the oyster, tuna and seaweed sectors where there are a number of licences issued and varying sized businesses across the licensees. The levy using hectares of a lease ensured that costs to be recovered were proportional to the size of the lease holdings as an indication of the size of the business. Hectares are not applied in finfish, mussels and abalone.
- Category fees: Paid to PIRSA depending on the risk associated with the land-based activity. Category A (low risk), Category B (medium risk) and Category C (high risk).

⁹ Australian Government Cost Recovery Guidelines (2014)

In 2015, the independent review found there were advantages to PIRSA's existing approach including:

- Cost reflective charges
- Economic efficiency
- The ability to report detailed information (transparency)
- Certainty regarding the costs PIRSA will be recovered each year.

However, there were also identified disadvantages of PIRSA's current approach:

- Lack of simplicity: PIRSA's cost recovery approach was complex and may present barriers to industry in understanding the objectives of cost recovery and how to respond to price signals;
- Cost to administer: the cost of administering PIRSA's cost recovery approach was high with the current process being an annual process, which takes a number of months to administer; and,
- Volatility: Currently, the licence fees being charged to industry can significantly vary each year. This can pose issues for fisheries looking to undertake business planning exercises and can be a barrier to investment.

In 2015, the independent review findings/recommendations included:

- PIRSA's approach to cost recovery creates a significant administrative burden through annually negotiating management plans, recording time and resetting charges. This administrative burden increases the overall cost of the cost recovery approach, which is ultimately recovered from industry.
- PIRSA's cost recovery approach is largely transparent and accountable but could be improved by publicly providing documents (online) that explain how PIRSA recovers costs, the services it will provide, the cost of those services and the performance of PIRSA activities against the cost recovery budget.
- PIRSA's approach to allocating costs has become more accurate since the 2009 review as it now uses data from time-recording software. Staff are now required to complete a timesheet each week and allocate hours to each sector (e.g., tuna, rock lobster, abalone) and the tasks undertaken within each sector (e.g., licensing, compliance).
- PIRSA's cost recovery approach represents a trade-off between the principle of economic efficiency and other principles of simplicity (including the cost to implement) and avoiding volatility.
- Government policy continued to result in some cost recovery principles not applied to aquaculture (No indirect or corporate costs attributed)
- There is a need to update PIRSA's Cost Recovery Policy to include:
 - an explicit principle for transparency, accountability and performance measures
 - that charges be simple, clear and easy to understand,
 - include only efficient costs and avoid volatility
 - Setting fees for longer periods (with annual indexation) to increase the degree of certainty for PIRSA and industry.

In 2015, the Fisheries Council (which had industry representation) was replaced by the Cost Recovery Committee (with no industry representation).

In 2016, the Productivity Commission¹⁰ reviewed fisheries and aquaculture generally in Australia and had called for implementation of best practice for cost recovery.

Through 2015 to 2017 there were continued concerns raised by sections of the commercial fisheries sector with PIRSA's cost recovery process resulting in a 2018 pre-election

¹⁰ Productivity Commission, 2016, Marine Fisheries and Aquaculture, Final Report.

commitment to establish an independent review - including comparison with other Australian jurisdictions.

The independent review in 2018 found PIRSA had made significant progress on a number of fronts following the 2015 independent review including:

- Cost recovery policy amended to include 11 principles, including a specific principle on transparency and accountability
- Key cost recovery documentation was now online
- Four-year cost recovery programs were implemented in some fisheries to reduce administrative burden and increase certainty to industry and PIRSA. PIRSA did advise the Panel that despite introduction of 4-year terms there are still requests from industry for regular meetings and administrative actions.
- A 'co-management policy' had been established

The 2018 independent review findings also noted:

- Previous role of Fisheries Council (including a focus on cost recovery) was now transferred to PIRSA Finance Committee (no industry representation)
- Lack of details as to the costing, timing and negotiation process that occurs every one to four years between industry and PIRSA

The recommendations of the Review included:

- The cost recovery policy should contain documentation around risk assessment and the CRIS (see Commonwealth guidelines)
- The cost recovery policy should provide greater detail when aligning expenses to revenue to ensure it is clear and easy to understand (similar to the Commonwealth guidelines); and,
- Establish a more robust independent verification process for the five-year cycle review encompassing all elements of the cost recovery framework including:
 - Cost model reviews should be a regular requirement going forward including best practice and financial modelling standards; and,
 - Cost models should enable sensitivity analysis of various activities and costs recovered

The South Australian government responded to the 2018 Review by:

- Noting the Review advice that transparency and accountability had improved whilst reducing administrative burden with the introduction of four-year cycles.
- Updating several sections of the South Australian Cost Recovery Policy in line with recommendations
- Agreeing to PIRSA establishing a more robust, independent verification process encompassing all elements of the costing framework (policy, process, cost model, cost inputs and drivers). This should be utilised as a basis to strengthen review processes in future years.

There were several key themes raised by industry (listed below) that fell outside the terms of reference of the 2018 independent review (set out on page 42 and 43 of the KPMG final report). However, these were noted for consideration in the next review of the Cost Recovery Program in 2020. These included:

- Inconsistent application of cost recovery policy within PIRSA (e.g., fisheries vs agriculture)
- Lack of transparency and reporting leading to queries that public good, recreational and other sectors are subsidised by commercial industry
- Programs not derived/linked with a risk-based / innovative approach in mind (e.g., e-logs)
- Program negotiation is highly prescribed. Little opportunity to have meaningful impact to help drive costs down

- No reporting of effort/cost against anticipated outcomes/budget
- Mixed views over cost and service level of SARDI stock assessments

The recent Heilbron report (SG Heilbron Economic & Policy Consulting, 2023b) was commissioned by the SA government to detail:

- Output 1) - a review of the current cost recovery approaches in fisheries and aquaculture undertaken in South Australia (including advising on the economic logic) and other comparable jurisdictions; and
- Output 2) – a business case detailing a proposed move from the current cost recovery model to a GVP cost recovery model.

Unfortunately Output 1) was not provided but Heilbron suggested under Output 2) that a %GVP model:

- may provide benefits as it shares the risk between industry and government,
- reduces complexity in administrative processes,
- reduces disputation around management costs and
- protects fisheries that are relatively high cost to management (relative to their GVP) from unsustainably high management charges, particularly in periods of volatile prices and costs.

However, the report also noted that:

- such a system would create potential inequities between aquaculture sectors, with some fisheries effectively subsidising the management of others; and,
- it also distorts the price signal between provision of, and payment for, management services.

Overview of Current PIRSA Cost Recovery Process

The South Australian Aquaculture Act (2001) provides that the aquatic resources of the State are to be managed to promote ecologically sustainable development of aquaculture, maximise benefits to the community and ensure the efficient and effective regulation of the industry. The Government introduced a Cost Recovery Policy some 14 years ago (based on the similar policy initiated by the Commonwealth government for cost recovery) to enable consistent decision making on the appropriate recovery of costs of services delivered by the Department of Primary Industries and Regions (PIRSA) across the portfolio, including aquaculture managed by PIRSA.

All applications for aquaculture licences are reviewed for environmental issues and referred to the Environment Protection Authority to ensure any environmental impacts have been considered and appropriately addressed.

All applications for aquaculture leases are referred to the Minister for Transport to ensure any impacts on transport or navigation routes are considered and addressed.

The Act also provides for new lease applications to be subject to a public call process. This enables tenure to be allocated through a competitive process and ensures all interested parties have an opportunity to consider a lease in the area. Following a public call, all applications received are subject to independent assessment by the Aquaculture Tenure Allocation Board (ATAB) who advise the Minister on matters relating to the allocation of tenure by determining which applicant/s are most likely to produce the maximum benefits to the community from their use of the state's aquatic resources.

Regular review of the regulations aims to streamline regulatory and administrative processes and reduce red tape, implement reforms that support and promote best practice by industry and strengthen environmental and biosecurity outcomes for South Australia.

The key milestones in PIRSA's cost recovery process are set out in the PIRSA Fisheries and Aquaculture Cost Recovery Framework (PIRSA, 2022) and includes:

- September: In conjunction with the relevant industry association, review the long-term objectives for each fishery or aquaculture sector, update if necessary and identify priority outcomes for the upcoming financial year;
- October: PIRSA to develop policy, research and compliance work programs in readiness for discussions of fisheries managers with industry in November;
- November: PIRSA to consult and reach agreement with the relevant industry association in relation to proposed program content including objectives, strategies, actions, initiatives, performance indicators, deliverables. Industry associations are required to consult with wider industry stakeholders;
- February: Formal meetings between PIRSA and industry association to finalise work programs and summarise costs;
- March: PIRSA to submit proposed commercial licence fees for approval to the Minister and setting regulations;
- June: Invoices sent for annual licence or lease fees;

For those fisheries or aquaculture sectors that have entered into a longer term agreement (Cost Recovery Implementation Agreement), the annual meeting cycle moves to a single meeting in February of each year. Either PIRSA or the industry representative may initiate additional meetings if programs or services require amendment;

PIRSA's cost recovery consultation process with industry comprises:

- Development of management priorities for each aquaculture sector;
- Agreement on draft work program and services to be undertaken to address the priorities identified;
- Finalising work programs and summarising costs for delivery of work program in the Cost Recovery Implementation Statement (CRIS) in order to establish the setting of fees, licences and other charges to recover costs.

PIRSA provides documents to industry that cover the following information in a financial year for each fishery or aquaculture sector:

- The management objectives for each fishery or aquaculture sector
- The total cost of services
- PIRSA's charge out rates for different activities
- How charges are calculated and supporting documentation
- Program initiatives to be completed by PIRSA
- Anticipated outcomes, including performance indicators.

This information is provided in the following key documents:

- Cost Recovery Implementation Statement (CRIS) for each fishery/aquaculture sector based on a single year or, where agreed, a four-year term (with CPI index applied)
- Annual report on PIRSA Service Delivery on Cost Recovery for each fishery/aquaculture sector, listing key deliverables achieved for each service program.

PIRSA delivers cost recovered activity services such as:

- Program management
- Resource planning – identify areas and policies
- Leases and licences
- Legislation
- Business services
- Compliance
- Aquaculture systems
- Animal health
- Environment
- Other

PIRSA calculates a daily rate for each service and includes:

- Direct costs (only)
 - Employee expenses
 - Operating expenses

In addition to past reviews, the ICRRP has been provided documentation by PIRSA including (but not limited to):

- South Australian Aquaculture legislation and regulations
- PIRSA Cost Recovery Policy
- PIRSA Cost Recovery Framework
- Cost Recovery Implementation Statement (CRIS) for each aquaculture sector.
- Aquaculture production: South Australia, 2021/22 - \$237,900,000
- Goals and objectives for all aquaculture sectors
- Fisheries and Aquaculture Stakeholder Engagement Internal Audit – Galphins Report, November 2022 (Confidential – not provided to industry)
- PIRSA Annual Service Delivery Reports
- SARDI Cost Recovery Process for aquaculture (see [Appendix 5](#))

Findings and Recommendations

Overall findings and recommendations

The Panel found strong support from PIRSA and the aquaculture industry for the existing PIRSA Cost Recovery Policy (PIRSA, 2020) including the overall objectives of cost recovery, the eleven principles set out in the Policy and specifically the key elements as set out in Principle 7 of the Policy (i.e., effectiveness, transparency, accountability, stakeholder engagement).

The aquaculture whole-of industry submission and face-to-face meetings with the Panel emphasised the very clear message that the industry was comfortable with the current PIRSA cost recovery process, and that its relationship with PIRSA over cost recovery was generally functional.

However, the Terms of Reference for this Independent Review stated that *'Irrespective of the findings of the [past] independent reviews and the recent improvements in the cost recovery process, there remains significant and increasing challenges with the current process.'* ([Appendix 2](#)).

This is despite past independent review reports having consistently cited issues of transparency around activities and costs associated with management and a lack of a transparent and consultative risk-based framework for setting activity levels as catalysts for ongoing tension between PIRSA, SARDI and industry. Regular recommendations have been made to better define the costs of activities and then clearly identify the attribution of costs between all beneficiary user groups.

The Panel noted that its overall assessment of the current situation is consistent with the findings of these previous reviews, and that a lack of response to some recommendations of these past reviews has contributed to some queries and transaction costs. These included:

- There is very limited transparency around the costs, and what activities these relate to, specifically in regard to regulation of recreational fishers, management of the resource for Indigenous users and the benefits to the broader community.
- That regular benchmarking analysis (perhaps every 3-5 years) of PIRSA regulatory and SARDI research costs (and making the results publicly available) to improve transparency and ensure regulatory costs are efficient.
- Establish a more robust independent verification process for the five-year cycle review encompassing all elements of the cost recovery framework, including:
 - Cost model reviews should be a regular requirement going forward including best practice and financial modelling standards.
 - Cost models should enable sensitivity analysis of various activities and costs recovered.

The Panel identified goodwill on the part of both PIRSA and all sectors of the aquaculture industry to positively engage in a process to 'improve' the cost recovery system in the aquaculture industry in South Australia. There were some aquaculture sectors that expressed they were comfortable with the existing cost recovery model but who also questioned some of the costs attributed to them.

The Panel reviewed cost recovery and revenue models in other jurisdictions, both in Australia and internationally (see [Appendix 6](#)), and found no alternative model that would be consistent with the overall objectives of a cost recovery approach as set out in both the Australian (Department of Finance 2022) and South Australian cost recovery policies and guidelines.

In relation to the use of a %GVP charge to collect management costs from industry, the recent Heilbron report (SG Heilbron Economic & Policy Consulting, 2023a) suggested that:

- a %GVP model may provide benefits as it shares the risk between the aquaculture industry and government,
- reduces complexity in administrative processes,
- reduces disputation around management costs
- protects aquaculture sectors that are relatively high cost to management (relative to their GVP) from unsustainably high management charges, particularly in periods of volatile prices and costs.

However, the report also noted that:

- such a system would create potential inequities between sectors, with some sectors effectively subsidising the management of others;
- it also distorts the price signal between provision of, and payment for, management services.

The Panel found the use of the %GVP model in Western Australia reflected the findings in the Heilbron Report.

There has been a reduction in the tensions between the WA industry and government arising from the constant call for explanation of costs attributed to a fishery under the previously applied cost recovery system. The WA fisheries management agency advised that they can apply the levels of funding to agency priorities rather than being restricted by cost recovered funding tied to a specific sector's priorities.

The Panel was also advised that the management agency in WA has been unable to deliver against particular objectives and stated priorities due to lack of resources. This is curious as the funding agreement sets out the agency annual expenditure budget is always covered by a combination of the %GVP revenue raised supplemented by government appropriation and so agreed priorities should always be funded (as would be the case under a cost recovery model). It appears that in practice the agency resourcing is impacted by broader government appropriation decisions and public service policy restrictions (eg maximum FTEs). The Panel was advised that the increase in broader management government priorities such as cyber security, marine parks development, renewable energy site development, WHS, environmental oversight took precedence.

Contrary to expectations in WA there has been a continuing level of disconnect between industry and the management agency in relation to management decisions. Management activities and priorities in a specific sector may not be progressed in any one year given available resources are directed to priorities elsewhere. Given that the funding arrangements can be changed by decision of the Minister this does not provide for a long-term planning capacity by industry

Importantly, the Western Rock Lobster fishery contributes approximately 70% of the total state GVP and the advent of the China import restrictions on Australian rock lobster has reduced this revenue stream significantly placing even more pressure on the Government to provide funding of baseline core sustainability requirements across all fisheries.

The Panel accepts that many of the issues of concern raised with the %GVP model are not specifically attributed to the model but do impact the application of the revenue model to achieving fisheries management objectives.

Specifically, the Panel does not support moving to a %GVP funding model (as applied in Western Australia) for the recovery of aquaculture management costs as has been suggested

by some as a way to improve recovery of PIRSA management costs in South Australia. The reasons for this are:

- The Panel found no support from the aquaculture industry for the %GVP model (see industry issues raised - Appendix 3).
- Attempting to recover costs through a charge levied as a %GVP is inconsistent with accepted cost recovery principles (user pays) and Commonwealth guidelines on appropriate charging mechanisms.
- The Panel discourages the use of a charging mechanism that conflates the recovery of management costs and collection of a community return, as may occur with a uniform %GVP model.
- The existing PIRSA cost recovery policy is acceptable and as such specifically excludes resource rents and instructs that cross-subsidy should be avoided.

The Panel supports retaining the existing PIRSA cost recovery policy and as such specifically excludes resource rents and instructs that cross-subsidy should be avoided.

Recommendation 1: The Panel recommends retaining the existing PIRSA Cost Recovery Policy, and hence the activity based, attributable cost model, on the basis of it having a strong theoretical and policy rationale, and the strong support of industry.

Notwithstanding Recommendation 1, the Panel acknowledges that should Government further consider the introduction of a resource rent charge as a way of securing a return to the community for the use of the marine resource, that this would necessitate further review of the existing cost recovery model given the link between aquaculture management (and costs) and resource rent, and the need for administrative efficiency (*see the Theoretical basis for cost recovery section*). Resource rent charges did not form part of the Panel's discussions with industry or PIRSA, other than it being noted that access charges, such as %GVP, were more generally suited to the collection of a community return than to the recovery of management costs from beneficiaries.

The Panel identified weaknesses in several aspects of the current cost recovery system that must be addressed to ensure that cost recovery, as applied in South Australian aquaculture sector, delivers outcomes that are consistent with the overall objectives and key elements of the PIRSA Cost Recovery Policy.

The Panel noted that the South Australian government responded to the findings of the 2018 Independent Review by agreeing to PIRSA establishing a more robust, independent verification process encompassing all elements of the costing framework (policy, process, cost model, cost inputs and drivers). This independent verification process was expected to be utilised as a basis to strengthen review processes in future years. The Panel did not see evidence of this verification process having taken place.

The Panel sees value in renegotiating the principles as a way of bridging the gap between the generic principles that apply to the entire portfolio contained in the PIRSA Cost Recovery Policy (2020) and the application of this policy to aquaculture.

Recommendation 2: The Panel recommends a 'revise and reset' process, that:

- addresses the range of issues with existing cost recovery policy, principles and implementation (revises); and,
- based on this revision, recalibrates cost recovery settings and charges (resets).

The Panel is strongly of the view that a 'revise and reset' process should as a minimum:

- establish a joint working group (involving external facilitation of key stages) to allow for meaningful engagement between PIRSA and the SA commercial aquaculture industry peak body and include membership with direct cost recovery experience (external to PIRSA and industry);
- involve external facilitation of key stages;
- include terms of reference that requires establishing cost recovery principles, a revised attribution model, a documented set of guidelines for implementation and key benchmarking processes;
- include consideration of transitional arrangements;
- include an impact assessment of key revisions (e.g., attribution model), of reset charges and of transitional arrangements;
- be adequately resourced and funded by the SA Government. The recommended process is to review government policy which is in place to benefit the community. Any review of government policy should be government funded.

The Panel noted that a potential weakness of the current attributable cost model is that sectors in aquaculture can vary widely in their ability to pay for management, and as the level and costs of managing and regulating aquaculture grow, recovered costs may put pressure on economic viability on some developing aquaculture businesses.

Principle 2 of the Cost Recovery Policy (PIRSA, 2020) notes that full cost recovery may not be appropriate if the industry is unable to cover these costs. This situation should firstly trigger a review to:

- i) ensure existing management and regulation is appropriate for the circumstances of the sector, and
- ii) to avoid unnecessary regulation, with the aim of reducing recovered costs

The Panel does see a role for introducing a sector-wide 'self-insurance' fund that would act as a short-term safety net for at risk aquaculture sectors and be used to fund initiatives to improve their viability.

The Panel noted that this industry self-insurance fund would be much the same as the previously existing Industry Development Fund (as noted in Hall, 1995) which was levied as a small percentage of GVP. The Panel noted also that the section 79 of the Aquaculture Act 2001 has provisions under the Aquaculture Fund to support such a "self-insurance" fund. The Panel supports a %GVP approach for this fund as it is a 'revenue' arrangement and on that basis is different to 'cost recovery'. This differentiation is based on this levy being a negotiated agreement with industry (including support for cross-subsidy) resulting in clear principles and guidelines managed by PIRSA and the industry peak body upon receiving a formal application request.

<p>Recommendation 3: The Panel recommends that the 'revise and reset' process consider creating an aquaculture self-insurance fund, levied as a small percentage of GVP to provide a 'safety net' for at-risk aquaculture sectors.</p>

Specific findings and recommendations

The Panel has identified weaknesses across the cost recovery system framework and processes as described below. Recommendations for how these could be addressed as part of the *'revise and reset'* process are also set out below.

1. Cost Recovery Policy Framework

Detailed guidelines for implementing cost recovery policy and management processes can ensure consistency and transparency and are central to a well-functioning cost recovery system. Similarly, principles are the primary criteria against which options for cost recovery are tested and assist in weighing up the trade-offs about when, and who, to charge and how costs should be calculated and charges designed. It is the Panel's view that read together, PIRSA's Cost Recovery Policy (2020) and Fisheries and Aquaculture Cost Recovery Framework (PIRSA, 2022) do not provide agreed principles or implementation guidelines that are adequately contextualised to fisheries and aquaculture, and that this is contributing to the current lack of mutual understanding and acceptance of cost recovery processes and outcomes between PIRSA and some parts of industry. Some general principles were also set out in PIRSA's 2002 aquaculture cost recovery discussion paper, but the Panel is not aware of them having been endorsed by government and industry.

The Panel was provided with a copy of the initial, mutually agreed, South Australian fisheries and aquaculture cost recovery principles (Hall, 1995) which many in industry were of the belief was still of relevance, but of which PIRSA was unaware.

As referred in Recommendation 1, the Panel sees value in renegotiating the cost recovery principles as a way of bridging the gap between the generic principles that apply to the entire portfolio contained in the PIRSA Cost Recovery Policy (2020) and the application of this policy to aquaculture¹¹.

Furthermore, the Panel supports the conclusion of its theoretical review of cost recovery in aquaculture that both the user pays and risk-creator principles are relevant here, and that this needs to be made explicit in the policy framework.

The Panel also believe that the heavy reliance on references to the 2002 Productivity Commission Cost Recovery Review and Australian Government Cost Recovery Guidelines (2014) to provide guidance on cost recovery implementation in the PIRSA Cost Recovery Policy contributes to opaqueness in processes, and that such guidance should be contextualised to aquaculture and clearly visible. For example, the Panel did not find any documentation explaining how PIRSA attributes costs, what these attributions are or how often these attributions are reviewed.

Recommendation 4:

- The Fisheries and Aquaculture Cost Recovery Framework document be revised and expanded to include a set of negotiated fisheries and aquaculture cost recovery principles, including making explicit that both user pays and risk creator principles are relevant to the recovery of aquaculture management costs.
- The Fisheries and Aquaculture Cost Recovery Framework document be revised and expanded to include comprehensive guidelines on cost recovery implementation, including, but not limited to, the agreed attribution model and activity costing model.

¹¹ ¹¹ The Panel does not necessarily endorse the principles in FMP7 (Hall, 1995).

The Panel considered the AFMA process should be considered carefully during the recommended 'revise and reset' process. The AFMA model applies high level cost recovery principles that are similar to those used in South Australia to its activities and the negotiated outcomes from the application of those principles clearly establishes, in the first instance, the attribution of activities across the identified beneficiary sectors across the entire AFMA budget. This results in a clear explanation of what management activities are applied, who benefits from those activities and what proportion of the costs of an activity is to be attributed to each sector. Importantly this is set out in a single annual CRIS for transparency and ease of comparison. While focused on fisheries management rather than aquaculture, the AFMA process establishes a rationale equally applicable to aquaculture.

The proportion determined to be recovered from the aquaculture sector can then be further attributed across the individual aquaculture industries based on agreed criteria/formulae and then the individual licences and leases. The proportion determined to be public benefit is found from Government revenue. Any proportion attributed to other sectors (e.g., recreational, indigenous, commercial fisheries) is clearly established under this approach and allows government to make determinations on whether to recover those costs. These proportions can also be set out in the same single annual CRIS providing transparency across the entire AFMA budget to all stakeholder groups.

The current AFMA attribution splits across industry, government and other revenue are demonstrated in [Appendix 6](#).

The current PIRSA Cost Recovery Implementation Statement (CRIS) goes some way towards capturing these characteristics. Long term objectives and goals ("outcomes") are identified in the PIRSA CRIS. However, the links between the management activities and these objectives and goals are not articulated. Instead, they are more procedural in terms - what the activity will be rather than how it will help achieve the desired outcomes. The costs of these activities are transparent in that they identify what each of the cost components relate to but are not justified as to why they are required to be that level.

Recommendation 5:

- A single, annual, whole of agency, cost recovery implementation statement (CRIS) for the PIRSA Fisheries and Aquaculture Budget needs to be developed similar to that created by AFMA (See AFMA 2022-23 CRIS)
- This CRIS should set out the proportions attributed to each sector (including the recreational sector in the case of fisheries, and the general public for both fisheries and aquaculture) for the entire PIRSA fisheries and aquaculture cost recovery budget (with supporting rationale from applying the cost recovery policy, principles and guidance developed through the 'revise and reset process')
- The CRIS should include the attribution of activities and associated costs to the individual fisheries and aquaculture industries (with supporting rationale).

2. Designing Cost Recovery arrangements

2.1 Cost Attribution (When and who should pay?)

The Panel heard from the aquaculture sector that they were generally satisfied with the way in which attributions were determined, referring to an earlier process when these were negotiated and agreed. An attribution framework was set out in PIRSA's 2002 aquaculture cost recovery discussion paper (PIRSA Aquaculture, 2002) and indicative attributions shown, but the Panel is not aware of these having been endorsed by industry or government at the time, or of the current status of either the framework or indicative attributions. The Panel noted

that they received many industry submissions from the commercial fisheries sector that challenged the attribution of costs under existing cost recovery arrangements.

The Panel's review of theoretical issues related to cost attribution and assessment of attribution processes in other jurisdictions suggests that a more structured and transparent approach to determining whom should pay for the cost of particular services/activities be established based on the assessment of a range of considerations related to the economic nature, benefit and risk creator attributes of the service/activity, and the explicit management objectives as set out in relevant aquaculture management plans and legislation

The Panel stresses the importance of applying the same cost attribution model to all sectors (commercial, recreational, Indigenous and aquaculture) and that where final attributions of comparable services differ, this should be transparent, with rationale provided and be justifiable against the policy, principles and guidelines.

Recommendation 6:

- An attribution model be developed that enables the structured and transparent attribution of services across beneficiaries and risk creators, and accounts for both administrative and economic efficiency.
- Attributions be revisited every three years and the attribution model be reviewed every five years.

2.2 What costs should be recovered?

As a general principle, PIRSA's Cost Recovery Policy (2020) requires recovery of the full cost of attributable services, where full costs are to include direct and indirect (corporate and other overhead costs), the cost of capital and the cost for capital. While the Panel did not conduct a detailed assessment of PIRSA's costing method/model, several issues related to recoverable costs were identified by the Panel over the course of this review.

The Panel received conflicting reports regarding the percentage of recoverable costs that are charged to industry, with the vast majority of the aquaculture industry generally believing they paid 100% while, for the same period, PIRSA cited several examples of recoverable costs that were not fully recovered (e.g., some overheads, in-kind contributions and the cost of producing individual fishery CRIS). The recent Heilbron report (SG Heilbron Economic & Policy Consulting, 2023a) seems to confirm PIRSA's position on this, using PIRSA data to estimate that overall 47-51 percent of recoverable costs are charged to aquaculture industry (excluding co-management and FRDC costs). PIRSA advised that on average 20% of attributed costs to the aquaculture sector are currently not recovered, with the shortfall reflecting the historical decision to not charge aquaculture indirect or corporate costs.

The Panel was also advised by some in the aquaculture sector, they are paying costs that should not be attributed to them, but that they prefer to not "*rock the boat*" by questioning the basis for attributing these costs because they are currently accepting of the overall level of cost recovered charges as set out in the aquaculture industry issues raised with the Panel in Appendix 5.

The Panel noted in Hall (1995) the government position was, that with aquaculture being in the development stage, there would be a delay in full cost recovery being progressed immediately in this sector.

PIRSA's 2002 aquaculture cost recovery Cabinet discussion paper (PIRSA Aquaculture, 2002) proposed that full cost recovery (100% of attributable costs) should be applied in the commercial aquaculture sector to be phased in over 5 years. PIRSA also noted that the

proposed differential fee treatment of developmental and production leases should avoid full cost recovery being a disincentive to potential start-up companies in the aquaculture sector.

The 2015 independent review found PIRSA continued to apply less than full cost recovery in the aquaculture industry (by excluding indirect and corporate costs) as government was of the view there was no capacity of licence holders to pay 100%. This policy decision to move away from full cost recovery (and therefore absorb costs through the South Australian Government) was seen to be consistent with Principle 2 of PIRSA's Cost Recovery Policy. The Review also advised that best practice was to be transparent and provide explanations to justify these exclusions.

It was raised with the Panel that this policy remains despite the aquaculture industry currently generating as much GVP as commercial fisheries (e.g., BDO calculated GVP for 2020/21 – aquaculture \$237m; commercial fisheries \$199.6m).

The Panel supports the use of reductions, or discounts¹², in the portion of costs recovered from industry so long as this is transparent, justifiable and efficient. There is currently no clear statement of permissible circumstances under which such reductions can justifiably be made, and this contributes to the impression that where these are made, they are *ad hoc* and inconsistent. Permissible circumstances should include both short term relief in response to disruptions (such as has occurred in the past as part of Covid support, trade disruption support, structural adjustment support etc.) and to smooth the impact on industry of large changes to charges, and discounts in pursuit of broader social and economic government policy considerations (such as support to emerging industries and regional development goals)¹³.

The Panel supports the recommendations of past South Australian cost recovery independent reviews that fees and charges should initially be developed exhibiting full cost attribution to sectors (commercial and recreational and aquaculture) and then further to individual aquaculture sectors (eg tuna, oysters and finfish). Where Government chooses to intervene in the market there should be a transparent decision-making process supporting this intervention. Any social implications should be taken into consideration in determining whether a government subsidy or discount applies against the fully attributed costs to some user sectors (as set out above). The level of government subsidy, if any, to be provided should be clearly documented.

2.3 *How should charges be designed?*

The Panel found the current reliance on recovering costs using a mixture of levies and fee-for-service to be consistent with policy and generally applied appropriately.

Recommendation 7: The 'revise and reset' process should consider the appropriate use of levies (licence and lease fees) and fee-for-service to ensure the mix is consistent with any revised attributions and with the principles of efficient and equitable cost recovery.

¹² In this case we consider discounts to be a reduction in costs that have been attributed to a sector in order to recognise exceptional circumstances. Appropriate attribution to different beneficiaries (including the public) is appropriate as a first step before discounts are considered.

¹³ The broader policy considerations should also be explicitly captured in the fisheries management objectives for consistency and transparency.

3. Management Processes

3.1 Frequency and scope of review

The Panel noted the 2009 independent review findings and recommendation for establishing a regular benchmarking analysis (perhaps every 3-5 years) of PIRSA's management and regulatory activities and SARDI's research activities and the costs of these activities. The authors of the 2009 review recommended that the results of such analyses should be made publicly available to improve transparency and ensure regulatory and research activities and costs are efficient, effective and contemporary. This recommendation does not seem to have been implemented by government.

The Panel also noted in the PIRSA Corporate Plan 2022-23 a commitment to benchmark and analyse performance to inform decisions.

The Panel found support within PIRSA, SARDI and industry for regular benchmarking analysis (every 3-5 years) of PIRSA's management and regulatory activities, SARDI's research activities and the costs of these activities.

The New Zealand government favours the review of cost recovery regulations on a three yearly basis and to undertake out of cycle reviews if large, unexpected surpluses or deficits emerge.

Recommendation 8: The revised cost recovery framework should include a clear timetable for regular benchmarking of PIRSA and SARDI activities and costs.

3.2 Stakeholder engagement and consultation

The Panel sensed that members of the aquaculture sector were generally satisfied with their interactions (engagement and consultation) with PIRSA about cost recovery and did not report the same high level of tension and mistrust that was reported by members of the fisheries sector. This accorded with PIRSA's overall assessment of the nature of consultation around the CRIS process with the two sectors.

The Panel's recommended 'revise and reset' process is intended to engender greater trust, confidence and transparency in the structures and processes that sit behind cost recovery, on the assumption that if industry trusts the structures and processes (attribution model, compliance risk model, benchmarking processes and costing model) there will be greater acceptance of outcomes and lower transactions costs.

The Panel noted that there is currently no over-seeing 'cost recovery advisory body' that includes industry representation that could help to diffuse tensions and provide industry with confidence in the cost recovery system. The Panel also noted that the 2009 cost recovery review advised that the previous Fisheries Council 'gave confidence to industry that the cost recovery policy principles were being applied appropriately', yet this structure was removed in 2015 and replaced with an internal PIRSA group.

Recommendation 9: The Panel recommends the establishment of an over-seeing 'cost recovery advisory body' charged with responsibility to consider and advise on broader sector-wide cost recovery policy, principles and implementation issues.

The Panel notes the establishment of the new South Australian industry peak body and proposes this group work with PIRSA which may alleviate the requirement to establish another body.

3.3 *Monitoring and Performance Reporting*

The Panel noted that annual compliance risk profiles are developed in conjunction with industry in each aquaculture sector covering all main activities in that sector (e.g., biosecurity, lease marking, TEPs, disease management). Compliance Performance Reports are provided to industry every six months (usually drafted in a form requested by industry).

The total PIRSA initiated compliance activity applied in the aquaculture sector is minimal.

PIRSA's Annual Reports on Service Delivery document key deliverables and are provided to relevant industry groups but do not include reported actual against budgeted expenditure across programs, or any measures of outcome (i.e., whether cost recovered activities are meeting intended objectives).

AFMA acquits its cost recovered expenditure each year and adjusts levies in the following year for each fishery for any over or under recoveries. All cost recovered activities are subject to a detailed annual review as part of AFMA's budgeting processes.

New Zealand undertakes regular reporting to stakeholders about the performance of cost recovered services to support improved transparency and accountability for delivery of efficient and effective services. Intended that reporting includes a wider range of information, including actual and forecast breakdowns of the types of costs that are involved in service delivery (both direct and indirect costs), service volumes and achievement of service standards.

Recommendation 10: A comprehensive cost recovery performance framework be developed and that the recommended revised CRIS (see Recommendation 5) report appropriate outcome, output and input performance measures.

4. *Services provided*

4.1 *Management*

The Panel received positive feedback from industry about activities and costs associated with PIRSA's aquaculture management program, noting that this generally comprised the smallest component of most industries recovered costs.

4.2 *Compliance*

The Panel found PIRSA, and some members of the aquaculture sector, have views that differ on the best compliance approach. PIRSA appears to apply a very precautionary and risk averse approach, with many in industry of the view this is based on a somewhat outdated attitude to compliance.

Industry's preference is for a more contemporary approach to compliance with greater self-responsibility for industry and greater acceptance of technological advances all operating under a PIRSA 'trust and verify' process.

Some in aquaculture did convey to the Panel that they did not fully understand where some charges came from but were nevertheless happy to accept them without challenge given the low cost impost overall.

While the level of complaint from aquaculture regarding the way compliance is managed and dealt with in cost recovery was less than from commercial fisheries, the Panel did identify weaknesses with the risk assessment process (that failed to translate into improvements in compliance and industry-driven investments that could have been expected to reduce

recovered costs), and the level of transparency, consultation and justification provided as part of the process.

Those in the aquaculture industry with experience in Commonwealth fisheries outlined how AFMA seems prepared to investigate changes to management practices and clearly outline 'upfront' how activities and costs may change should a new approach be agreed (e.g., cameras, e-logs, VMS, other technology). The AFMA Corporate Plan states "*We are actively committed to minimising the regulatory burden of compliance, while continuing to ensure that the legislative requirements are met.*" A performance measure in the AFMA Corporate Plan is to increase the number of empirical data collection services offered electronically. While this Corporate Plan is aimed at the commercial fishing sector, its underlying principles are equally applicable to aquaculture.

The Panel noted the PIRSA Corporate Plan 2022-23 commits to resetting the operating environment by removing barriers to economic growth of primary industries and ensuring policy and legislation are fit-for-purpose to underpin effective responses and efficient systems. The Plan highlights the need for technological innovation capabilities aligned with PIRSA priorities and to driving adoption of emerging innovative production practices and technologies. PIRSA advised that they are very supportive of technological advances and has recently funded (at no expense to industry) e-CDRs and e-Logbooks while continuing to drive digital transformation in the management of fisheries.

The Panel's review of theoretical issues related to cost attribution and of attribution processes in other jurisdictions suggest there may be grounds for the policing and enforcement activity components of compliance costs to be paid by Government. The distribution of benefits of these activities is complex. All sectors benefit in proportion to their share of the resource in terms of ensuring sustainability of the resource and enforcing property rights. Compliant aquaculture licence holders benefit from enforcement preventing non-compliance of others. The community also benefits by ensuring their resource is used sustainably.

Also, an argument can be made that since the marine waters and any fish used for broodstock are typically owned by the State in the relevant waters, at first principle the relevant State is responsible for policing and enforcement. Even where there are aquaculture licences issued, any wrongdoing takes place in open access/non-exclusive waters which are State owned. The benefits of full compliance accrue to the State who owns the natural resources and only indirectly/diffusely to individual licenced aquaculture operators.

In this regard, the wrongdoing is against the State who owns/manages the water and fish (and prosecutes charges), not the individual aquaculture licensee. It is the State who has decided to manage the water as an economic and social resource for a range of users and is therefore charged with meeting management objectives for sustainability and therefore for controlling commercial use. Therefore, compliance enforcement services are public good costs, as the direct benefit is to the State who owns the entire marine estate. These costs are differentiated from those costs of complying with lease sites, lighting and marking, water testing and disease management which would not be required were there no aquaculture industry. These should be cost recovered.

Many New Zealand stakeholders noted in a 'first principles' review of cost recovery that compliance costs impact on their ability to remain competitive, and that it is not always possible to pass these costs on to consumers and that it is important to consider the impact on growth in export markets and wider economic objectives. Government did agree that it is important to consider how charges might impact on market competitiveness (or other management and regulatory objectives). It was highlighted in this review that in some cases it may be appropriate to consider recovering less than full costs or to phase in cost recovery.

Recommendation 11: The broader attribution of benefits arising from policing and enforcement activities should be further explored as part of the recommended 'revise and reset' process.

The aquaculture industry indicated that many of the activities and recovered costs rolled over from year to year, with little need for negotiation. While industry may make improvements regardless of PIRSA agreement (on the basis of the private benefits they confer) failure to translate them to lower recovered costs, or any uncertainty about this occurring, will dampen investment and the incentive to comply. Where possible, industry require greater understanding of how the compliance model works, and what the impact on recovered costs of industry improvements will be.

The AFMA Compliance Risk Assessment is undertaken in consultation with key stakeholders. Ongoing monitoring and review is undertaken during the course of the year to ensure that any new or emerging risks are identified and managed effectively. In accordance with the National Compliance and Enforcement Policy, AFMA adopts a risk-based compliance approach enabling AFMA's resources to be deployed to target areas when required and where most effective. It involves a series of steps to identify and assess non-compliance risks and then apply appropriate actions to mitigate these risks. The methodology utilised for risk analysis is detailed in AFMA's National Compliance Risk Assessment Methodology. PIRSA advised that it follows a similar approach through a regionalised model in accordance with most of the Fisheries state agencies, applying traditional compliance strategies through education, deterrence and enforcement. PIRSA emphasised to the Panel that a mature fishery should expect about a third of the effort undertaken by compliance to be divided between each of these strategies.

Recommendation 12: An independent review/benchmarking of PIRSA's compliance program and costs is undertaken as part of the 'revise and reset' process and that this includes:

- Review of the compliance risk model and of the consultative arrangements to determine the risk profile for each aquaculture industry
- Assessment of the scope for using external compliance contractors for some more straightforward aspects of compliance (e.g., boundary checking, data confirmation)
- Assessment of other jurisdictional approaches to new technological opportunities for compliance delivery
- That, as part of the 'revise and reset' process, this review/benchmarking be paid for by government

Recommendation 13: A review of the compliance program and benchmarking of compliance costs is undertaken on a regular basis (3-5 years) and that these activities are cost recovered proportionally across sectors.

4.3 Science and Research

There were no concerns raised by the aquaculture industry with regard to the research conducted by SARDI. PIRSA advises that the research which is subject to cost recovery is that required under legislative requirement to ensure impact from the risk creator (aquaculture) is detected and managed (in accordance with the Aquaculture Act, EPA legislation, and ANZECC water quality guidelines).

Nevertheless, the Panel noted the 2009 independent review recommendation that best practice requires regular independent review and benchmarking of the research and science that underpins management, and that this does not appear to happen systematically.

As with other management costs discussed earlier (e.g., policing and enforcement), there is an argument that the public, via government, should also contribute to research directly supporting aquaculture management. Research directed at supporting the development of an aquaculture industry and ensuring it is operating sustainably is of direct benefit to the broader community. Further, the public good nature of some of the research undertaken provides a rationale for some public support.

In New Zealand research targeted at general biodiversity or geographic features or land or water use is to be taxpayer funded in recognition that all the different groups of beneficiaries or risk exacerbators cannot be efficiently or equitably identified or charged.

Recommendation 14: An independent review of PIRSA's research program and costs as part of the *'revise and reset' process* is undertaken.

Recommendation 15: SARDI to produce fully-costed research on a project by project basis for each individual fishery's research program and then apply any State contributions, 'in-kind' contributions, and non-inclusion of overheads to provide full transparency.

Recommendation 16: A review of the science program and benchmarking of science costs is undertaken on a regular basis (3-5 years) and that these activities be cost recovered proportionally across sectors.

5. Other considerations

Current issues affecting cost recovery in the aquaculture sector need to be considered in light of the broader contextual factors that are impacting the marine environment to ensure aquaculture management funding is sustainable into the future.

For example, climate change driven environmental impacts, heightened demands on the marine estate for traditional and non-traditional uses as the Blue Economy evolves, and various issues related to social licence, are transforming the policy, management and operational landscape of the marine estate for Government, managers and industry alike, in many cases putting pressure on industry viability and management resources, and on industries capacity to fund management programs. At the same time, management agency budgets are under increasing pressure due to inflation of costs and, in some cases, reduced central budget allocations.

In the context of cost recovery, in addition to ensuring appropriate and efficient levels of service delivery across all aquaculture management programs, the contestable provision of service delivery and minimising unnecessary regulatory burden, Government should:

- Futureproof the cost recovery attribution model by:

- Ensuring cost recovery attribution models and processes are responsive to growth in the level, types and variations of use made of the marine estate/environment by being capable of recognising where aquaculture management activities may benefit groups other than the aquaculture sector and where the activity of these other groups may be creating or exacerbating risk to aquaculture sustainability.
- Recognising that risks to sustainability created by global pressures, such as climate change, require substantial investments in aquaculture science and research and that the cost recovery attribution model must be capable of supporting attributions of activities/costs that arise as a result that are fair and justifiable.
- Look for opportunities to expand the use of co-management arrangements between PIRSA and industry, particularly where these would result in more efficient delivery of services.
- Explore other funding streams. For example, as the Blue Economy evolves there may be opportunities for alternate revenue or cost savings by exploiting synergistic needs across marine user sectors, particularly in data collection, but potentially in other management activities, such as planning, compliance and research. While such collaborations should be sought out on a sector-by-sector basis, it will also be important for the aquaculture sector (industry and PIRSA) to be proactive in engaging with integrated oceans management processes and initiatives as they unfold at all levels of government.
- Make greater use of fee-for-service charges for services (e.g., data provision) provided to other government agencies and outside organisations/groups.
- Assess the capability of PIRSA's IT system to support the efficiency gains and cost savings that could reasonably be expected to flow from some industry process improvements and investments in technology (e.g., lease markings, feed volumes, waste management). If found to be wanting, this will dampen the incentive for industry to innovate and invest, and ultimately reduce competitiveness.

Appendix 1 Biographies of ICRRP Members

Brett McCallum

Brett has over 40 years experience in the commercial fishing, pearling and aquaculture industries commencing with the MG Kailis Group in Fremantle in 1979.

The majority of his career has been as CEO of two major peak fishing industry representative groups - the WA Fishing Industry Council and the Pearl Producers Association.

Brett is currently a Commissioner for the Australian Fisheries Management Authority and a past Deputy Chair of the Fisheries Research & Development Corporation.

He has represented the commercial fishing industry in a number of state and federal government working groups and committees. His expertise covers commercial fisheries management, government policy setting, natural resource management, consultation, economics and business management.

He has held senior managerial positions with several leading Australian fishing, pearling and exporting companies including the MG Kailis Group, Broome Pearls and Lombardo Seafoods.

He is also currently:

- Chair - Fisheries Research and Development Corporation Research Advisory Committee (in both WA & SA);
- Chair - Australian Aquatic Animal Welfare Strategy Working Group;
- Chair - Offshore Snapper Fishery Advisory Committee in the NT;
- Consultant – Safety and Training – WA Fishing Industry Council; and,
- Director of a private fisheries consulting business since November 2015.

Brett has a strong belief in inclusiveness and a passion for empowering industry stakeholders through providing them with the necessary information to make informed, responsible decisions about their industry. He actively encourages younger people in industry to take on leadership roles - often mentoring them along the way.

Dr Sean Pascoe

Sean is a marine resource economist with over 35 years of experience in the economic analysis of fisheries and the marine environment across a range of sectors:

- Australian Bureau of Agricultural and Resource Economics, (10 years)
- University of Portsmouth, UK (as Professor of Natural Resource Economics and Director of the Centre for the Economics & Management of Aquatic Resources (CEMARE) (12 years),
- CSIRO (2006 – current).

Dr Pascoe worked with the UN Food and Agricultural Organisation, the OECD and the European Commission on several international fisheries management issues. He also worked with the UK Government as an advisor on the Prime Minister's Strategy Unit "Net Benefits" study considering fisheries reform in the UK, and on a study on cost recovery for UK fisheries.

Since returning to Australia in 2006, Dr Pascoe has worked with several key Australian fisheries, including the Commonwealth Northern Prawn Fishery, the Southern and Eastern Scalefish and Shark Fishery and the Torres Strait Rock Lobster Fishery, as well as several State fisheries in Queensland and NSW.

He is a current member of the Queensland Fisheries Expert Panel, the AFMA Economics Working Group and a recent member of the NSW Total Allowable Fishing Committee. He was also recently President of the International Institute of Fisheries Economics and Trade (IIFET) and is currently an Adjunct Professor of Economics at the Queensland University of Technology.

Dr Sarah Jennings

Sarah is a natural resource economist with broad experience in applying sound economic thinking and analysis (quantitative and qualitative) to inform marine management; and in working in interdisciplinary teams to address complex system-level problems (e.g. climate change).

Sarah has played a central role in developing economic capability in marine economics, through her extensive research, research training, teaching, administrative and leadership experience in the university sector, as leader of the FRDC's Economic Capability Building Project and Co-coordinator of the Human Dimensions Research Subprogram.

Now retired from the university sector, Sarah maintains a strong commitment to working in roles that capitalize on her skills and experience to contribute to sustainable and equitable economic, social and ecological outcomes in the marine environment at all scales.

She holds an adjunct position at the University of Tasmania and is a founding member of the Centre for Marine Socioecology; she is a member of the Commonwealth SERAG, SESSFRAG, and SEMAC, and of the AFMA Economics Working Group.

Sarah maintains a small research program through her occasional involvement in a number of projects, including the FRDC's Impact of Covid-19 on Australian Fisheries project.

Appendix 2 Terms of Reference – Aquaculture

SOUTH AUSTRALIAN AQUACULTURE COST RECOVERY REVIEW

INDEPENDENT COST RECOVERY REVIEW PANEL

1. Background

The South Australian Government introduced a Cost Recovery Policy, which the Department of Primary Industries and Regions (PIRSA) has been operating for approximately 20 years. The policy operates from the premise that South Australia's aquatic resources are owned by the State and managed by PIRSA on behalf of the South Australian community. Any costs associated with government services that arise as a direct result of commercial access to the resources, are recovered partly from commercial licence/lease holders through regulated licence/lease fees.

These services include, but are not limited to, management, policy, scientific monitoring and stock assessment, compliance and licensing. PIRSA established a cost recovery policy to enable consistent decision making on the appropriate recovery of costs of PIRSA's goods and services which is based on the Australian Government Cost Recovery Guidelines 2014.

In order to ensure the State's public aquatic resources are managed in a sustainable, efficient and cost-effective manner a review process was established under the PIRSA cost recovery policy, which is undertaken on a five-year cycle to ensure best practice arrangements are maintained. The PIRSA cost recovery policy has been independently reviewed by Deloitte in 2009 and 2015 and KPMG in 2018. These reviews have typically focused on incremental improvements to, or streamlining, the existing system of cost recovery, and hence on the process or mechanics of the system rather than its inherent economic logic and the model itself. Irrespective of the findings of the independent reviews and the recent improvements in the cost recovery process, there remains significant and increasing challenges with the current process.

In March 2022, the South Australian Minister for Primary Industries and Regional Development announced the Government's Election Commitment to undertake an independent cost recovery review of the current seafood sector cost recovery policy/model to ensure it is sustainable and appropriate.

Across Australia, there is significant variability in the cost recovery models used in the various jurisdictions, PIRSA currently use an activity-based cost recovery model.

In order to address the Election Commitment, the Minister has established an Independent Cost Recovery Review Panel to review PIRSA's current cost recovery arrangements. The Panel will comprise members with expertise in fisheries economics, management and commercial business practices. As part of this review, it will be necessary for the Panel to consider alternative cost recovery approaches that are fair and equitable and assess these against current arrangements. In undertaking the review, submissions will be invited from the aquaculture sector, other interested stakeholders, PIRSA and other relevant government agencies.

2. Independent Panel Members

Membership of the Independent Cost Recovery Review Panel comprises:

- Mr Brett McCallum – Chair and fisheries management and commercial business expertise
- Dr Sarah Jennings – Fisheries economic expertise
- Dr Sean Pascoe – Fisheries economic expertise

3. Purpose

To provide advice to the Minister on the most appropriate, fair and equitable cost recovery arrangements for the aquaculture sector in South Australia.

4. Scope

In developing its recommendations, the Independent Cost Recovery Review Panel is to:

- Consider existing government cost recovery policies in South Australia and other jurisdictions.
- Consider previous cost recovery review reports (i.e. Deloitte, KPMG), as well as the recently commissioned report by independent consultant SG Heilbron, to review the current economic logic, consistency and transparency of the current cost recovery policy framework in South Australia, paying particular attention to the different resources involved and varying risk levels.
- Consider the above reports and any business cases detailing alternative approaches for the aquaculture sector,
- Examine and report on the application of the current cost recovery process and policy in South Australia in relation to other jurisdictions for aquaculture,
- Examine, assess and, if appropriate, recommend alternative cost recovery processes and policies applied in other Australian jurisdictions and internationally, for aquaculture
- Consider any other matters considered relevant by the Panel or the Minister.

In achieving this task, the Panel will be required to:

- Engage with PIRSA to identify the data, information, reports and policies necessary to undertake the review and analysis.
- If deemed necessary by the Panel, undertake consultation with technical experts familiar with cost recovery models used for aquaculture.
- Consult (online or face-to-face) with aquaculture sector, other relevant stakeholders and government agencies.
- Consider submissions invited from the aquaculture sector, other relevant stakeholders and government agencies.
- Explain and justify the recommended cost recovery approaches to the Minister in a written report and be available for discussion of the report recommendations.
- Maintain full records of all activities undertaken by the Panel.
- Individual Panel members may be required to undertake separate tasks and variable time commitments.

PIRSA will provide relevant background information, any additional relevant information requested by the Panel where such information exists, and access to PIRSA's files regarding relevant matters. PIRSA will also provide executive support and administrative services to assist with the deliberations of the Panel.

5. Reporting Relationship

The Panel will report directly to the Minister.

6. Deliverables and Timeframe

A draft report of the Panel is to be completed by 30 April 2023, subject to all necessary data and information being provided to the Panel in a timely manner.

Appendix 3 Summary of Issues raised by Aquaculture Submissions and Consultations

Industry representatives raised several issues relating to cost recovery and the provision of fisheries management services. These were both through written submissions and at the in-person meetings. These issues, reflecting the perceptions of industry, are summarised below.

Industry Status

- The stand-alone Aquaculture Act (2001) underpins certainty for investment by industry
- Aquaculture leases have lesser rights than commercial fishing licences
- Aquaculture is still developing with the exception of SBT farming. (e.g., Kingfish holding 10,000 tonnes production space across several sites but currently only producing 3000 tonne)
- Most aquaculture is single species (e.g., SBT, oysters,) or single companies (e.g., kingfish, mussels, abalone) and as such there are straight forward relationships with PIRSA and the EPA
- Regulators are very good with acceptance to trial new approaches and adjust their activities to suit
- Aquaculture companies are large enough such that many of their own staff do a lot of the work to satisfy regulations

Cost Recovery

- Cost recovery is not applied in many parts of the world
- No country imposes more than attributable costs to aquaculture
- Cost recovery is an economic issue not a social issue. Cost recovery guidelines do not refer to social outcomes
- Current system works for aquaculture as it provides certainty against the long-term production timelines
- CRIS process works well and is a great way for companies/sectors to share their strategies with PIRSA
- SA CRIS process is similar with other states for aquaculture in which SA companies also operate giving consistency across operational jurisdictions
- When setting up a cost recovery framework government and industry went through a detailed process into what was an attributable cost, which sector was using the service and how the costs would be distributed between aquaculture sectors. Some items were discussed robustly as to whether the benefit of the service was for industry or government. Only after there was agreement with the principles were the budgetary costs attributed and the cost to each sector was resolved
- There has never been a comprehensive re-negotiation of the fundamental principles since 1995 (FMP#7)
- Initially a cost recovery committee included industry (Fisheries Council) but was disbanded in 2015
- Four-year cost recovery budget cycles a positive outcome
- Aquaculture is happy with the cost recovery process (because cost low overall) but not sure where some costs come from (e.g., \$44k compliance in SBT farming).
- Aquaculture firmly of the view they pay 100% of attributable costs. Sector surprised to understand that 100% of PIRSA attributable costs are not recovered
- Some sectors (e.g., mussels) have undergone a huge consolidation of leases in recent years which should mean that there are cost reductions from efficiencies for government when dealing with a smaller number of entities and less of PIRSA's time as a percentage of the total aquaculture costs than first attributed.

Alternate Model

- %GVP model may suit some but not all and can create distortions in fees and through cross subsidy
- %GVP model is a 'resource rent tax' not recovery of costs of service delivery from beneficiaries
- Does not encourage industry to be inventive or drive efficiencies. No reward for improving outcomes
- One-size-fits-all cost recovery model will not suit all industries
- Aquaculture industry sees GVP model is a disincentive for investment for a company
- Strategy is to grow with minimal costs and maximum return to the company and economy
- Some see aquaculture lease similar to a pastoral lease

Transparency

- Aquaculture is comfortable with current cost recovery levels (low compared to their GVP) but still feel transparency is lacking.
- Aquaculture do scrutinise PIRSA costs but not much changes from year to year. If there is a new item to add to the CRIS they have a reasonable understanding of what that will cost
- Stable, predictable and transparent costs are needed for global and domestic market business arrangements.

Compliance and Risk

- Aquaculture sectors not sure what the compliance activities are that they are charged for but comfortable with current cost recovery levels (low compared to their GVP)

Legislation

- Removing unnecessary regulation is also of benefit
- Legislation should keep pace with technological initiatives delivering more efficient services and outcomes, particularly for compliance (eg electronic monitoring, e-logs)

Appendix 4 Distribution of benefits between consumers and producers

The economic theory underlying the distribution of benefits between consumers and producers identifies the level of consumer and producer surplus received by each. Consumer surplus is the additional benefits that consumers receive over and above the price (P) they are required to pay for the fish given the quantity (Q) supplied. This is the green area under the demand curve in Figure 2. Producer surplus is the level of profits received by fishers given quantity Q, determined from the level of revenue (P*Q) less the costs of fishing, defined by the area under the supply curve. This is the blue area above the supply curve in Figure 2. This producer surplus represents a number of different types of “rent”, including intra-marginal rent reflecting different levels of individual fisher efficiency and also heterogeneity in cost structures within the fleet. The total benefits generated in the fishery is the sum of the consumer surplus plus producer surplus.

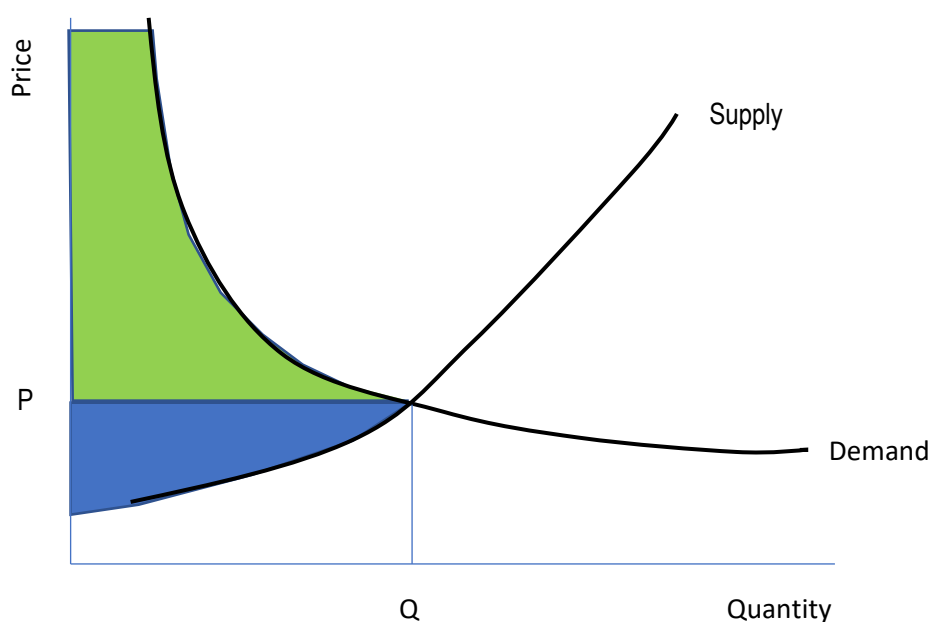


Figure 2. Producer and consumer surplus in an unrestricted fishery

The share of total benefits accruing to consumers can be derived given the characteristics of demand and the production process. We derive the (price dependent) demand function as $P = \alpha Q^f$ where $f < 0$ is the own price flexibility. That is the price received for the species on the market decreases as the quantity produced increases. The demand curve also represents the average revenue curve.

The supply of product reflects the marginal cost (MC) of production. That is, the additional cost of supplying an additional unit of output. More fish will be produced provided the price is greater than the marginal cost, and the equilibrium point is where the price is equal to the marginal cost. Beyond this point, the cost of capturing an extra unit of fish exceeds the price received. Given this, we can identify a supply curve given by $MC = P = \beta Q^c$ where $c > 0$ represents increasing marginal cost with quantity supplied (the steepness of the supply curve), and $c = 0$ represents constant marginal cost (implying a perfectly homogeneous fishing fleet).

Given this, we can estimate consumer surplus (CS) as

$$\begin{aligned}
 CS &= \int_0^Q aQ^f dq - PQ = \frac{1}{f+1} aQ^{f+1} - PQ = \frac{1}{f+1} PQ - PQ \\
 &= PQ \left(\frac{1}{f+1} - 1 \right)
 \end{aligned}
 \tag{1}$$

and producer surplus (PS) as

$$\begin{aligned}
 PS &= PQ - \int_0^Q \beta Q^c dq = PQ - \frac{1}{c+1} \beta Q^{c+1} = PQ - \frac{1}{c+1} PQ \\
 &= PQ \left(1 - \frac{1}{c+1} \right)
 \end{aligned}
 \tag{2}$$

The share of consumer surplus (CS/(CS+PS)) is then given by

$$\begin{aligned}
 \frac{CS}{CS+PS} &= \frac{PQ \left(\frac{1}{f+1} - 1 \right)}{PQ \left(\frac{1}{f+1} - 1 \right) + PQ \left(1 - \frac{1}{c+1} \right)} = \frac{\left(\frac{1}{f+1} - 1 \right)}{\left(\frac{1}{f+1} - 1 \right) + \left(1 - \frac{1}{c+1} \right)} \\
 &= \frac{\left(\frac{1}{f+1} - 1 \right)}{\left(\frac{1}{f+1} - \frac{1}{c+1} \right)}
 \end{aligned}
 \tag{3}$$

and the share of producer surplus is hence $PS/(CS+PS) = 1-CS$.

Given this, the share of consumer surplus given different cost coefficients (c) and price flexibilities (f) can be derived (Figure 3).

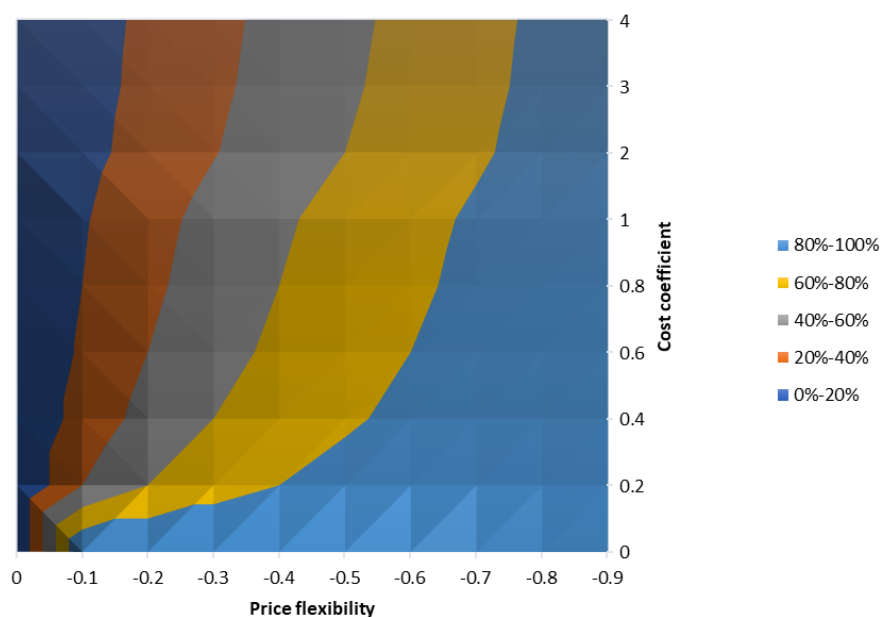


Figure 3. Share of CS in total benefits under different demand and supply conditions

Consumers are the main beneficiaries when price flexibilities are relatively high in absolute terms (i.e., a steeper demand curve) and marginal costs are low (i.e., a fairly flat supply curve). Conversely, consumers gain little or no benefits when prices inflexible (i.e., low price flexibilities) irrespective of the cost structure of the industry.

Price flexibilities for key SA species are not known. However, for key exports species, price flexibilities can be assumed to be zero. Any consumer benefits would be realised in overseas markets and not in SA, so all benefits would accrue to producers. For domestically landed product, earlier studies elsewhere have found short run fish price flexibilities to be around -0.39 for high value species and around -0.63 (Pascoe, Schrobback, Hoshino, & Curtotti, 2022), and short run prawn price flexibilities to be around -0.44 (Schrobback, Pascoe, & Zhang, 2019). Given these price flexibilities, we would expect consumer benefits to be in the order of between 40% and 60% of total benefits with sectors with high marginal costs, and between 80% and 90% for sectors with very low marginal costs of production.

Table 1. Consumer surplus share of total benefits, unrestricted fishery

Price flexibility (f)	Marginal cost parameter (c)								
	0	0.2	0.4	0.6	0.8	1	2	3	4
0	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.1	100%	40%	28%	23%	20%	18%	14%	13%	12%
-0.2	100%	60%	47%	40%	36%	33%	27%	25%	24%
-0.3	100%	72%	60%	53%	49%	46%	39%	36%	35%
-0.4	100%	80%	70%	64%	60%	57%	50%	47%	45%
-0.5	100%	86%	78%	73%	69%	67%	60%	57%	56%
-0.6	100%	90%	84%	80%	77%	75%	69%	67%	65%
-0.7	100%	93%	89%	86%	84%	82%	78%	76%	74%

Domestic market focused aquaculture provides fish to local consumers. That a market exists for these fish indicates that consumers have a demand for these products and gain benefits in the form of consumer surplus from their consumption. If consumers did not benefit from these products, there would be no market price and no production. Accounting for these benefits in the attribution model is therefore appropriate.

Export oriented production may also provide benefits in the form of consumer surplus, but this is outside the country. Hence, there is no additional benefits to the “owners” of the resource and benefits only accrue to the aquaculture producers who produce the product.

Appendix 5 Current SARDI Cost Recovery Process - Aquaculture

SARDI has a four-year Service Level Agreement to undertake and PIRSA Aquaculture Environmental Monitoring Program (2019/20 – 2022/23).

The objective of the program is to satisfy legislative requirements to ensure impact from the risk creator (aquaculture) is detected and managed (in accordance with the Aquaculture Act, EPA legislation, and ANZECC water quality guidelines).

This program relates only to the tuna and finfish aquaculture sectors and comprises two components:

- Pelagic Ecosystems & Oceanography – water quality, hydrodynamic and biogeochemical modelling at key sites inside and outside aquaculture zones in Port Lincoln area
- Seagrass – monitoring at key sites inside and outside of aquaculture nutrient plumes

PIRSA/SARDI works with stakeholders to identify research priorities and to develop and implement new projects as required.

The cost of the current 4-year program is \$827,998 attributed as follows:

- \$750,000 is recovered from tuna (65%) and finfish (35%) through lease and licence fees
- \$77,998 is 'in-kind' from SARDI

Appendix 6 Cost Recovery in Other Jurisdictions

Australian Fisheries Management Authority (AFMA)

Operates under the premise that Australia's Commonwealth fisheries are community owned.

As with PIRSA's cost recovery model the AFMA model is equally applicable to aquaculture.

AFMA implements a cost recovery policy and model that is almost exactly the same as PIRSA. Both are based on the Australian Government Cost Recovery Guidelines (2014).

The Commonwealth commercial fishing industry pays for those costs directly attributable to the fishing industry while the Australian Government pays for any costs identified as more directly benefiting the broader community.

The commercial fishing industry is not identified as the sole beneficiary of all of the AFMA activities and therefore the costs for activities are recovered proportionally between industry and the Government. Proportions were negotiated some years ago between government and industry. Those activities that are recoverable are then charged as a levy (eg management costs) or as fee-for-service (eg licensing and quota administration).

Negotiations were held between AFMA, Department of Agriculture and Department of Finance in 1990s to determine attribution rates payable by each group:

- compliance risk assessments, investigations and enforcement actions, cooperation with state, territory and overseas bodies - 100% payable by government
- research projects - 75% payable by industry
- data collection and data management - 60% payable by industry

These negotiated attribution levels have been reviewed several times but no changes have been forthcoming.

AFMA's activity-based approach has enabled the agency to determine the costs associated with each activity within the defined activity groups.

AFMA sets fees and charges to recover all the costs of services provided where it is efficient and effective to do so, where the beneficiaries are an identifiable group and where charging is consistent with Australian Government policy objectives.

Determination of priorities and availability of funding may be impacted if, and when, a particular activity occurs.

AFMA explanations of each of the key activity groups provides an overview of the activities included, the beneficiaries of those activities and who is responsible for the costs associated with each activity.

Cost Attribution Process

AFMA undertakes an annual budget process using an activity-based costing process.

AFMA reviews which group(s) uses and / or benefits from each activity and applies an approved method to allocate the costs proportionally.

Costs for activities are comprised of:

- Direct costs – mostly comprises staff costs for each fishery management area
- Indirect costs – allocated for specific activities using a cost driver for allocation (eg observer costs attributed using observer days in a fishery)

- Overheads – cannot be directly traced to specific activities (eg rent, maintenance, HR, payroll and information technology infrastructure)
- Capital costs – forward capital budget set and where attributable to a specific activity the cost will be directly allocated

Each activity is reviewed and its associated cost adjusted annually based on operational requirements, the price of goods and services received and estimates of achievable cost savings.

As part of the annual budget process AFMA consults in April with the peak industry body for Commonwealth fisheries, relevant fishery sector associations and each fishery management advisory committee (MAC). The quantum and composition of levied activities in each fishery is developed through this consultation and may change over time according to circumstances in a particular fishery. Following any consultation rounds AFMA will consider the comments received and make any necessary changes to address issues or suggestions made for improvement and final CRIS released in June.

AFMA acquits its cost recovered expenditure each year and adjusts levies in the following year for each fishery for any over or under recoveries. All cost recovered activities are subject to a detailed annual review as part of AFMA's budgeting processes.

AFMA currently uses government appropriation to supplement cash flow while levy regulations are being made, invoiced and then receipted in the latter half of the financial year.

Performance reporting

Measuring and publicly reporting performance will give the fishing industry, the community and individuals confidence that AFMA is effectively and flexibly managing risk.

AFMA utilises reporting from the Regulator Performance Framework under the Government's red tape reduction initiative. Activities are directly mapped to AFMA's goals and KPIs in its Annual Operational Plan and reported publicly.

AFMA Expenditure and Cost Recovery Levels

The total annual AFMA budget is ~\$47m.

Cost recovery activity budget ~\$23-26m pa (recovered across industry, government and other revenue)

In 2006 a government directive to AFMA was to maintain into the future the same cost to industry (+ CPI). Since 2012/13 to 2020/21 the AFMA cost recovery levy expenses budget has been consistently in the range of \$14.6m - \$12.6m with an underspend (often significant) in every year but one.

International fisheries management, foreign fishing compliance and indigenous and non-commercial fisheries - ~\$10.14m (Government funded)

Compliance - ~\$4.22m (Government funded). See detail below

Fee-for-service recovers ~\$900,000

Specific activity groups and cost recovery determinations by AFMA

Management of Domestic Commercial Fisheries

This activity group involves developing and setting management arrangements, such as catch and effort levels, in line with harvest strategies, monitoring the performance of domestic commercial fisheries, by-catch mitigation and stakeholder engagement.

There is no impediment to charging for these activities and the group that creates the need for the activities is identifiable. The user group is predominately Commonwealth fishery concession holders and it is appropriate that they are charged the majority of costs for the activity through a levy or a fee-for-service.

Split: Industry 63%: Government 37%

- Bycatch - Some bycatch management activities are performed to meet requirements from non-industry stakeholders and therefore is 30% funded by government
- Consultation and engagement - 20% of the costs associated with engagement with science organisations and agencies due to work being performed beyond essential fisheries management science is funded by government
- MACs/RAGS - 20% of the costs associated with engagement to meet the needs of non-industry stakeholders such as environmental non-government organisations (eNGOs) and recreational fishers is funded by government
- Risk Management - Includes assessment of fisheries under the *Environment Protection and Biodiversity Conservation Act 1991*. A small portion of activity costs (5%) are government funded as there are additional activities required beyond essential fisheries risk management.
- Species & environmental management – 5% of fisheries management activities (including implementing harvest strategies, setting total allowable catch and effort) are additional activities not essential for fisheries
- Strategy, governance and leadership - AFMA does not cost recover costs associated with its Commission, Chief Executive Officer or General Manager Operations. However, partial costs are recovered for the General Manager Corporate Services (25%) and the Executive Manager Fisheries (50%).

Data collection and management

Data collected through this activity group is essential to assessing the impact of Commonwealth fisheries on marine resources and the broader marine environment.

Directed at supporting fishing activity and monitoring the activities of commercial fishers

- implementing electronic monitoring systems,
- data entry of catch data records and logbooks,
- providing data analysis and extracts,
- placement of observers to collect scientific data,
- specific monitoring of certain fishing sectors,
- vessel monitoring

As this activity is primarily driven by commercial fishing activities it is appropriate that the majority of costs for these activities are recovered from the commercial fishing industry.

Requests for data extracts from other government agencies or released to the public are not cost recovered. In other cases, AFMA will recover costs on a fee-for-service basis.

Split: Industry 59%: Government 22%: Other revenue 19%

- Logbooks/Catch Records – 81% recovered from industry
- Data management

- Analysing data - 20% reflects the needs of government, eNGOs and other non-commercial stakeholders and is government funded.
- Management of fishery data plans and research reporting - 50% cost recovered because this activity benefits the government and industry in approximately equal proportions.
- Publishing data - for public access or use by government agencies is 100% government funded
- Electronic monitoring - includes the implementation and administration of the e-monitoring program. Currently includes additional system establishment costs - 50% government funded to assist establishment and encourage uptake
- Observers – some work done to meet non-industry requirements – 80% industry funded
- Fishery monitoring/data collection – undertake specific fishery monitoring – 100% industry funded
- Vessel monitoring – defined as part of compliance activity - 20% industry : 80% government

Licensing administration and revenue collection

Involves licensing transactions (grant, issue and register), transfer and leasing of concessions and recovery and accounting for fees/levies. Includes maintenance of systems and amortisation of systems.

Majority costs charged as mix of fee-for service for transactions and levy for balance

Split: Industry 50% : 42% Government : Other revenue 8%

- Licensing admin and revenue collection - licencing administration and transactional services such as processing applications, renewals and, transfers and includes formulating, reconciling, issuing and recovering levies and fees. – 62% Government funded
- Licensing administration and revenue collection systems - Involves recovering the costs for the development and maintenance of AFMA's licensing administration and revenue collection systems – 90% Industry funded

Domestic fisheries compliance enforcement

The activities in this key activity group contribute to the orderly management of the fishery as a whole to benefit the broader community.

This activity group is comprised of:

- compliance risk assessments,
- investigations and enforcement actions
- cooperation, consultation and the exchange of information with state, territory and overseas bodies having similar functions to AFMA.

AFMA sees the scope for non-compliance in fisheries is broad, but not solely attributable to the members of the commercial fishing industry. There are a range of users of fisheries resources such as the members of the public, recreational fishers, charter operators and state/ territory commercial fishers.

All of these sectors are accessing a community owned resource, so rather than recover domestic fisheries compliance enforcement costs from the commercial fishing industry, these costs are 100% government funded reflecting the range of threats to the community-owned fishery resource.

Research

AFMA required to establish research to support fisheries management decisions. This activity group includes activities and products that are used primarily by the Commonwealth commercial fishing industry including:

- surveys,
- fishery assessments,
- fishery modelling,
- new technologies,
- data analysis
- resource assessment groups.

Split: Industry 62%: Government 34% : Other revenue 2%

- Research Contract Administration – 50:50
- Research projects - Research costs have been split across cost recoverable activities (75%) and government funded activities (25%) to simplify administration and to better represent the general use of fisheries science by the Australian public.

New Zealand

Operates under the premise that all New Zealand fisheries are community owned.

NZ government implements a cost recovery policy and model that is almost exactly the same as PIRSA and AFMA.

The New Zealand government (NZ) supports cost recovery to improve the efficiency of resource use, for example, by encouraging users to be prepared before engaging with services, to make good decisions about how much of a service to use, or to take steps to mitigate the risks they create¹⁴.

Approximately 40% of MPI's departmental funding comes from cost recovery (2018)¹⁵.

The main objectives are to;

- Ensure application of principles of equity, efficiency, transparency and justifiability
- Ensure those who use services which enable commercial or private benefits pay for the services that deliver those benefits.
- Encourage those undertaking certain activities to take responsibility for managing risks to public health, biosecurity, or the sustainability of New Zealand's primary resources by ensuring they pay for the costs of managing those risks.
- Encourage efficient service delivery, while minimising transaction costs for service users and stakeholders wherever possible.

Principle of justifiability requires that, so far as is possible, only the reasonable costs of providing a service should be recovered.

¹⁴ Ministry for Primary Industries Cost Recovery Policy Guidance - MPI Information Paper No: 2018/08 - August 2018 (Prepared by the Ministry for Primary Industries)

¹⁵ Supporting information for: Cost Recovery at MPI - Findings from the First Principles Review of MPI's cost recovery arrangements - MPI Information Paper No: 2018/06 - August 2018 (Prepared by the Ministry for Primary Industries, New Zealand)

Principle of transparency requires costs to be allocated as closely as practicable to the service, and the period in which the service was provided and that the link between service costs and charges should be clear enough to enable scrutiny by those that pay charges. When charges are reviewed, cost estimates and forecasts are based on actual and known costs, and clearly documented assumptions (such as growth rates in service demand).

NZ recovers costs associated with activities and services that deliver outputs – those specific things that government services produce, or the immediate and direct result of those services.

In considering this approach it is recognised that a range of groups and individuals may benefit from this service and there is a public good component however the government takes the view the cost should be recovered from those who create the risk which is those who undertake the activity requiring audit or inspection. NZ government does not generally seek to recover costs or reflect benefits associated where a service contributes to wider outcomes (e.g., policy development as factors external to MPI also influence or contribute to these outcomes)

Levies cover costs of:

- monitoring commercial fishing activities
- monitoring commercial fishing activity through observer coverage
- administering commercial fishing services, registries, and quota.
- fisheries stock assessment research
- research necessary to manage and mitigate the effects of commercial fishing on the aquatic environment and biodiversity, including protected species

Wild catch licencees who must pay levies, and basis for levy

- quota owners, on the basis of the quota weight equivalent in relation to their quota share:
- individual catch entitlement holders (ICE), on the basis of the amount of ICE held:
- permit holders, on the basis of the amount of actual catch of non-QMS stock reported on the holders' MHRs:

Where undertaking science and/or research is used to inform specific management controls or setting of utilisation limits (e.g. stock assessment) then costs to be recovered from those that create the need for management controls. However, research targeted at general biodiversity or geographic features or land or water use to be taxpayer funded in recognition that all the different groups of beneficiaries or risk exacerbators cannot be efficiently or equitably identified or charged.

In some instances where government delivers science and research, there is more than one direct beneficiary of the output (e.g. where fisheries stock assessment research informs management decisions in shared fisheries, or research relates to protected species where risk exacerbators other than commercial fishing are known). In relation to these services, it is possible to identify other direct beneficiaries or risk exacerbators, but it is not feasible or efficient to equitably to charge them under the current regulatory framework, so the taxpayer funds on their behalf.

NZ assesses the practicality or expense to identify and charge parties. Generally it will be straightforward to identify direct beneficiaries and risk exacerbators as those that use or give rise to the need for the service. The level of service use may be a good indicator of risk or benefit.

NZ includes consideration of the cumulative impact of different government cost recovery arrangements. In some circumstances, government may choose not to recover costs, to share costs or to phase in cost recovery. Where charging would create perverse incentives (e.g., discourage voluntary reporting) and thus would be inefficient. This will however need to be considered on a case-by-case basis.

NZ government agrees it has an obligation to ensure stakeholders have confidence in the way cost recovered funding is used and managed and this is achieved through:

- Consultation when changes are proposed
- Regular reporting on the performance of cost recovered services.

Stakeholders are provided with information to ensure they understand:

- Why and how government delivers services and how to ensure service provision is efficient and effective.
- The principled basis for charges and the level of cost recovery.
- The forecast for actual costs of service delivery, including any historic under or over-recovery.
- The relationship between costs, volumes and service standards.
- The rationale for how charges have been designed, including whether charges represent average or actual costs.

Good strategic and operational planning underpins effective budgeting and forecasting, which in turn supports more accuracy in setting of charges. In NZ they encourage industry sectors to assist with understanding likely changes in service demand and emerging risks that can have implications for how government prioritise resources.

NZ ensures service users have input into planning where services are provided at the request of, or seek to provide a benefit to, specific individuals or groups.

NZ does acknowledge that it may be less straightforward however for service users to have input where services are designed to manage risks or ensure compliance with regulatory requirements. Care must be taken to ensure the agency maintains regulatory independence from the sectors it regulates.

NZ undertake regular reporting to stakeholders about the performance of cost recovered services to support improved transparency and accountability for delivery of efficient and effective services. Intended that reporting includes a wider range of information, including actual and forecast breakdowns of the types of costs that are involved in service delivery (both direct and indirect costs), service volumes and achievement of service standards.

In 2016 NZ undertook a First Principles Review (the Review) of cost recovery across all of the primary industry systems they manage (including fisheries). The purpose of the Review was to support a more consistent and transparent approach to cost recovery.

Many NZ stakeholders noted in the Review that compliance costs impact on their ability to remain competitive, and that it is not always possible to pass these costs on to consumers and that that it is important to consider the impact on growth in export markets and wider economic objectives. The government view was that in many cases, industry is able to internalise charges into cost structures and that is an efficient way to ensure that downstream or indirect beneficiaries or risk exacerbators contribute to costs. Government did agree that it is important to consider how charges might impact on market competitiveness (or other regulatory objectives). In some cases, it may be appropriate to consider recovering less than full costs or phase in cost recovery.

NZ government supports regular reviews of the cost recovery process, including charges, but the frequency of the reviews of charges needs to be balanced against the costs of the reviews and costs of any change for government and industry. The NZ government favours the review of cost recovery regulations on a three yearly basis and to undertake out of cycle reviews if large, unexpected surpluses or deficits emerge.

Government agrees that the way it recovers costs can influence incentives for efficiency improvement and is addressing this in the following ways:

- by improving the data held on costs, expenditure and revenue drivers and service performance
- through more frequent engagement with industry on cost recovery and by developing regular industry reporting
- examining the balance between input-based charges (such as hourly rates) and output-based charges (such as fixed fees), and the extent to which each support incentives for efficiency improvement.

Western Australia (supplemented by the SG Heilbron Report to PIRSA, February 2023)

Western Australia operated under an activity-based attribution cost recovery model for many years from 1995 under an industry/government policy agreement commonly known as the *Cole/House Agreement*. Essentially this approach mirrored the current cost recovery system in South Australia.

At the time this only applied to WA 'major' fisheries. Minor fisheries paid fees on the basis of a percentage of GVP of their fishery. In most cases this GVP contribution did not cover management costs.

All fisheries also paid 0.65% of the GVP of their respective fisheries into a Developing and Better Interests Fund (DBIF) from which industry peak bodies and FRDC contributions were paid among funding of other strategic fisheries, pearling or aquaculture matters.

Over time the policy of cost-recovery was seen to contain problematic issues:

- Industry felt that there was a lack of opportunity to assess the efficiency and effectiveness of service delivery through contestability of service provision,
- The Department felt the model was too inflexible because services (resources) were effectively tied to the major fisheries (which contributed the most funds), rather than to the areas of greatest need and / or risk (e.g., MPAs, EPBC).
- The model was costly to administer, provided difficulties in reaching agreement on priorities
- There was a negative impact on relationships with industry due to the on-going conflicts about the costs of services and their equitable recovery from industry.

In 2010 the Western Australian Government, through the Minister for Fisheries, introduced a 'package' of reform measures into the commercial fishing industry designed to achieve a range of objectives aimed at:

- Improving relationships between industry and government agencies
- More certainty over funding levels for both the Department and WAFIC
- A simplified system for the commercial licence fee system with greater transparency.
- Lower cost of fisheries management administration / more resources for strategic issues

- Clear and predictable cost to industry that can be factored into their business decisions.
- Improved equity in what fishers contribute through access fees
- New legislation to enhance commercial fishing (and aquaculture) access rights
- Greater flexibility in the use of revenue to meet priority needs of fisheries / greater focus on strategic planning over a reasonable time frame,
- Providing a foundation for a progressive development of risk-based regulation and/or self-regulatory approaches
- Introducing enhanced industry consultation arrangements,

The decision abolished the activity-based attribution cost recovery model and introduced an access fee set at a uniform proportion of the Gross Value of Production (GVP) for each managed commercial fishery in WA. Importantly it was promoted as based on revenue, not profit, and was not therefore a resource rent tax.

Importantly the revenue raised was delinked from the costs of management for the fishery from which the revenue was received.

Some argued at the time that under cost recovery there was inequity in what fishers paid in fees because the costs recovered were unrelated to industry economic conditions and capacity to pay and the costs of regulation fell disproportionately on some parts of the industry. Others argued a single rate proportion per fishery GVP approach entails cross subsidisation. Yet others argued it disincentivised investment in industry that may see GVP growth.

The package consisted of:

- Introduction of a new uniform system for determining 'access fees' for the State's commercial fishing, calculated at 5.75% of the GVP for each individual managed fishery.
- A new Recreational Fishing from Boat licence fee.
- Commercial fishing access rights were to be strengthened in upcoming new legislation.
- Co-management arrangements to be developed
- New consultation arrangements between industry and government
- New representation funding arrangements for the peak commercial industry body

Government provided undertakings as follows in a Ministerial Policy Guideline¹⁶:

- 0.5% of the GVP collected would be used for peak industry body funding (WAFIC). Industry advocacy would need to be channelled through WAFIC to government
- 0.25% of the GVP collected would be provided as the WA contribution to FRDC
- Balance of 5% of GVP would be applied by the fisheries management agency, at their discretion, to meet core sustainability requirements in each fishery and strategic priorities.

¹⁶ MATTERS RELATED TO THE 2010 FUNDING REFORM DECISIONS OF GOVERNMENT, Ministerial Policy Guideline No.21, Department of Fisheries (WA), February 2012

- Principles and criteria were to be developed to satisfy core sustainability requirements and those that are over and above will be identified
- WAFIC would be provided an opportunity to input into the Department's annual planning and priority setting process, including providing input on industry priorities for management and research.
- WAFIC will be advised of progress on project outcomes and deliverables.
- Revenue from the fees could only be used for commercial fisheries purposes – management, enforcement, research and monitoring fishing activity.
- GVP to be calculated on three year rolling average
- GVP calculation methodology would be determined with industry, collected and reviewed independently
- New fee system would be phased in over 5 years for some fisheries with no more than 100% increase in fees in any year
- Where a particular fishery requires services that exceed those required to meet core sustainability requirements, the services will be provided on a cost recovery basis unless otherwise negotiated between WAFIC and the CEO.
- Aquaculture licence holders would be charged on a fee-per -hectare basis
- Management Advisory Committees were abolished and replaced with a more streamlined, cost-effective process of annual fishery management meetings and tasked fishery working groups administered via an independent consultation process contracted through WAFIC under a Service Level Agreement to government.
- Review the funding model every 5 years

Budgeting

- Agency funded by access fees, licence fees and consolidated revenue
- Agency develops annual expenditure budget based on identified priorities and submits to Treasury for funding
- As access fees (GVP) rises and falls the treasury component varies to meet annual expenditure budget on a 'swings and roundabouts' approach
- Rock lobster 80% of WA commercial fisheries annual GVP. The huge GVP drop in rock lobster in 2021 due to China import limits left a big hole in the Department bucket
- More and more government priorities (e.g., MPAs, sharks, machinery of government) has placed pressure government dollars available.
- Government limits on total FTEs in public service means less fisheries management services able to be provided
- Creates difficult decisions for government to manage some fisheries to much lesser extent and overall services diminish

Findings from 2015 Review of WA GVP model¹⁷

The Review (2015) considered the objectives of the 'package' introduced by the WA government in 2010 which included:

- a proposed new legislative approach will incorporate a "risk based" approach to assessing the management needs of fisheries,
- an enhancement of the access right of participants;

¹⁷ REPORT ON THE REVIEW OF THE 2010 FISHERIES FUNDING REFORM DECISIONS OF THE WESTERN AUSTRALIAN GOVERNMENT (Peter J. Neville (September 2015))

- a greater recognition of the economic and social objectives.

To achieve these ends, the government drafted a new fisheries Bill and at the same time introduced changes to streamline the funding arrangements for the commercial fishing sector (introducing a %GVP licence fee and pearling and aquaculture (introducing a per hectare lease fee).

In terms of the overall implementation and efficacy of the new funding model, the 2015 Review found that implementation had satisfied the above stated objectives other than fact that the legislation to strengthen access rights was still not in place. (Note: The legislation remains outstanding at the time of this ICRRP report – August 2023).

The 2015 Review identified that the removal of the annual cost recovery “debates” and negotiations had taken away a source of constant friction in relationships and helped in changing the tenor of discussions between the parties towards a focus on more important and productive priority research and management issues. However, with the emphasis no longer on cost recovery there was a noted shift away from a focus on transparency in budget matters, to one of risk management and priority setting in Departmental activities. This had impacted adversely in some areas (e.g. a lessening of interest in co-management issues and outsourcing initiatives). The Review emphasised the need to ensure that these important areas are not forgotten to ensure delivery of services in the most efficient manner.

Through introduction of this funding model through a Ministerial Policy Guideline the Government effectively placed a ‘term of government’ timeline on the revenue model itself and the rate of proportion of GVP charged. To date successive governments have supported the policy without significant amendment. Given that funding arrangements can be changed by decision of the Minister this does not provide for a long term planning capacity by industry.

This industry and government have recognised that there will always be activities / priorities that will not be resourced in any one year with available resources. However, with a fixed fee basis, industry is wanting to achieve the maximum service delivery in a wide range of program areas from their fees and this creates its own tensions which need to be resolved within the consultation process for setting Departmental priorities, annual planning decisions, monitoring and auditing of outcomes.

Agreed criteria and principles allow industry (WAFIC) and the Department to have input into the evaluation of risks and subsequent priority setting which becomes captured in the Department’s Fish Plan.

The GVP methodology itself has been the subject of on-going review due to issues related to its calculation in some sectors and difficulties where companies are vertically integrated, or where only a few companies are operating and confidentiality issues arise. In order to improve the efficacy and acceptance of the model, a number of reviews (including identifying beachprice) have addressed particular aspects of the model.

With the abolition of MACs and other committees there is a view that the annual fishery consultation meetings have needed to be supplemented with special purpose meetings involving not only fishermen, but a broader range of participants depending on the issue under consideration. It was always envisaged that the Department would need to continue with such consultation notwithstanding the SLA above. This may involve “tasked working groups” as a more appropriate format. This has been further highlighted by the requirements of the Marine Stewardship Council process where wider stakeholder/community based consultation mechanisms are required.

Panel Findings since 2015 Review

The obvious issue in WA arising with the GVP model is that one sector, Western Rock Lobster, with a GVP approaching \$500 million per annum in 2018/19 was contributing approximately 80% of the total GVP revenue for the commercial industry as a whole. The advent of the China import restrictions on Australian rock lobster in 2019/20 has reduced this revenue stream significantly and placed obvious pressure on the Department to fund baseline core sustainability requirements in each fishery – let alone any strategic priority matters across the industry. Coupled with increasing government requirements on fisheries management agencies within existing budgets and FTE limitations (increased governance matters, marine parks management, increased spatial access inputs (eg seismic and renewable energy industry) has seen a reduction in the delivery of services by the Department.

There continues to be disagreements between industry and government in relation to the beachprice settings for the calculation of %GVP in some sectors.

WA Aquaculture Licence Fees

Under Ministerial Policy MPG21 (February 2012) instead of GVP, aquaculture licence holders (including the aquaculture component of pearling) will be charged an access fee for use of marine environmental resources (areas of water) based on a dollar per hectare basis. The issue of the appropriate treatment of Aquaculture (including pearling) fees and marine water lease fees be progressed following the passage of the new legislation.

The proposed new legislation was to provide an enhanced framework for pearling and aquaculture management including provisions for the declaration of aquaculture zones and improved security of access for the pearling industry. Discussion on proposals for such a fee structure commenced through the Working Group on Water Lease Fees.

The Minister for Fisheries (“Minister”) established the Water Lease Fees Working Group (“Working Group”) to provide advice on an appropriate fee, and to determine a method for calculating a rate per hectare, for access to the aquatic environment for pearling and aquaculture purposes.

The Minister also established the related Access Rights Working Group to identify factors affecting aspects of statutory access and other usage rights as they relate to the aquaculture and pearling industries; and where appropriate to enhance various aspects of those usage rights.

For pearling, the access to the wild stock pearl oyster resource is subject to the 5.75% GVP access fee while access to areas of water for growout are under separate lease. The lease arrangements and associated fee structure is in a ‘holding stte’ given the difficulties in bringing in the new ARMA legislation and transition from the current lease arrangements under the Pearling Act (1990).

Current pearling and aquaculture leases are issued for 21 years with fees as follows:

Pearling \$9.24/hectare/year

Finfish

- 1-5 years \$35/hectare/year
- 6-12 years \$80/hectare/year
- 13-21 years \$116/hectare/year

Non-finfish

- 1-5 years \$35/hectare/year
- 6-12 years \$50/hectare/year
- 13-21 years \$60/hectare/year

Minimum fee \$1000pa

There is no cost recovery applied to aquaculture.

Tasmania

There is currently no formal cost recovery in Tasmanian wild-capture fisheries.

A formal cost recovery arrangement has recently been implemented for the salmon aquaculture industry.

Current fees contribute to costs of management with the understanding the majority of costs are created due to there being a commercial fishery in place. Abalone is the only fishery that differs having a deed in place which agrees to payment of a resource rent.

There is no formal process for setting fees and no relationship to cost of management. A base fishery management cost is charged whether the fishery is open or not. Additional fees are charged should a fishery opens (e.g., scallops).

Victoria

In April 2004, a dedicated Fisheries Activity Costing System (FACS) was put in place to track specific activities carried out by Victorian Fisheries Authority staff, and retrospective cost recovery was introduced.

The Fisheries Cost Recovery Standing Committee (FCRSC) was established by the Minister responsible for fisheries to provide advice on the implementation and ongoing operation of the cost recovery program.

By 2008 complexity in data accuracy and reliability resulted in a call for a simpler, more transparent forward-budget cost recovery system. In 2014, after significant industry government consultation, the new process was implemented and included:

- a set of cost recovery principles;
- the services that Victorian Fisheries Authority (VFA) provides to industry (both recoverable and non-recoverable);
- the levels of recoverability for each cost recoverable service (i.e. the proportion to be attributed to the commercial sector);
- the costs incurred to deliver that service (both staff and operating);
- a preferred consultation approach; and
- milestones that industry can measure the department's performance against.

The Victorian system recognises the lack of clear demarcation between public and private goods.

Victoria has developed a cost recovery system which collects only around 11% of the total cost for fisheries and aquaculture with the rest provided from public funds. However there remains complexity, administrative resource intensity and tension with industry.

Many services in Victoria are non-recoverable because they are considered to generate public benefits.

Victoria does have a provision that allows for a waiver of the payment of a certain number of prescribed fee units to refund to industry the value of services which were not provided to them.

In Victoria, there is currently a movement for change to charging industry on the basis of a percentage of the Gross Value of Production (GVP) to reduce complexity, resource intensity and industry disaffection. Similar to Tasmania, Victoria has a royalty system applying to abalone.

USA

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) governs fisheries management in the U.S. Exclusive Economic Zone.

The MSA also authorizes and requires the collection fees and charges for a range of fisheries services including registrations of vessels, observer services, the Community Development Quota (CDQ) Program and limited access privilege programs.

Limited access privilege programs are those that allocate a percentage of the total allowable catch of a fishery for exclusive use by a person. Cost recovery fees recover the actual costs directly related to the management, data collection, and enforcement of the programs.

Fees are limited to 3% of the annual ex-vessel value of fish harvested by a program.

References

- AFMA. (2023). *Cost Recovery Implementation Statement 2022-23*. Retrieved from Canberra: https://www.afma.gov.au/sites/default/files/2023-02/afma_cris_final_2223.pdf
- Alexander, K. A. (2022). A social license to operate for aquaculture: Reflections from Tasmania. *Aquaculture*, 550, 737875. doi:<https://doi.org/10.1016/j.aquaculture.2021.737875>
- Anderson, E. E. (1986). Taxes vs. Quotas for Regulating Fisheries Under Uncertainty: A Hybrid Discrete-Time Continuous-Time Model. *Marine Resource Economics*, 3(3), 183-207. doi:10.1086/mre.3.3.42628941
- Androkovich, R. A., & Stollery, K. R. (1991). Tax Versus Quota Regulation: A Stochastic Model of the Fishery. *American Journal of Agricultural Economics*, 73(2), 300-308. doi:<https://doi.org/10.2307/1242714>
- Arnason, R. (2000, 2012-07-05). *Costs of Fisheries Management: Theoretical and Practical Implications*. Paper presented at the Microbehavior and Macroresults: Proceedings of the Tenth Biennial Conference of the International Institute of Fisheries Economics and Trade, July 10-14, 2000, Corvallis, Oregon, USA.
- Arnason, R., Hannesson, R., & Schrank, W. E. (2000). Costs of fisheries management: the cases of Iceland, Norway and Newfoundland. *Marine Policy*, 24(3), 233-243. doi:[https://doi.org/10.1016/S0308-597X\(99\)00029-9](https://doi.org/10.1016/S0308-597X(99)00029-9)
- Arnsten, E., & Hoff, A. (2022). *How does external pressure for sustainability change the role and identity of the business controller? A case study of the Norwegian aquaculture industry*. Nord universitet,
- Australian Tax Office. (2016). Minerals resource rent tax (MRRT). Retrieved from <https://www.ato.gov.au/business/minerals-resource-rent-tax/>
- Australian Tax Office. (2020). PRRT concepts. Retrieved from <https://www.ato.gov.au/Business/Petroleum-resource-rent-tax/PRRT-concepts/>
- Baines, J., & Edwards, P. (2018). The role of relationships in achieving and maintaining a social licence in the New Zealand aquaculture sector. *Aquaculture*, 485, 140-146. doi:<https://doi.org/10.1016/j.aquaculture.2017.11.047>
- BDO EconSearch. (2021). *The Economic Contribution of Aquaculture In the South Australian State and Regional Economies, 2019/20. A Report for the Department of Primary Industries and Regions*. Retrieved from Adelaide: https://pir.sa.gov.au/_data/assets/pdf_file/0007/389527/economic-contribution-of-aquaculture-in-south-australian-state-and-regional-economies-2019-20.pdf
- Belhabib, D., Sumaila, U. R., Lam, V. W. Y., Zeller, D., Le Billon, P., Abou Kane, E., & Pauly, D. (2015). Euros vs. Yuan: Comparing European and Chinese Fishing Access in West Africa. *PLOS ONE*, 10(3), e0118351. doi:10.1371/journal.pone.0118351
- Bell, J. D., Senina, I., Adams, T., Aumont, O., Calmettes, B., Clark, S., . . . Williams, P. (2021). Pathways to sustaining tuna-dependent Pacific Island economies during climate change. *Nature Sustainability*, 4(10), 900-910. doi:10.1038/s41893-021-00745-z
- Bronnmann, J., & Asche, F. (2017). Sustainable Seafood From Aquaculture and Wild Fisheries: Insights From a Discrete Choice Experiment in Germany. *Ecological Economics*, 142, 113-119. doi:<https://doi.org/10.1016/j.ecolecon.2017.06.005>
- Carpenter, G., & Millar, C. (2018). *Fisheries management costs: How the expense of Scottish fisheries management can be sustainably funded*. Retrieved from UK: <https://neweconomics.org/uploads/files/Management-costs.pdf>
- Coglan, L., & Pascoe, S. (1999). Separating Resource Rents from Intra-marginal Rents in Fisheries' Economic Survey Data. *Agricultural and Resource Economics Review*, 28(2), 219-228. doi:10.1017/S1068280500008212
- Cox, A. (2000, 2012-07-05). *Cost Recovery in Fisheries Management: The Australian Experience*. Paper presented at the Microbehavior and Macroresults: Proceedings of the Tenth Biennial Conference of the International Institute of Fisheries Economics and Trade, July 10-14, 2000, Corvallis, Oregon, USA.

- Cullen-Knox, C., Fleming, A., Lester, L., & Ogier, E. (2021). Perceiving Environmental Science, Risk and Industry Regulation in the Mediatized Vicious Cycles of the Tasmanian Salmon Aquaculture Industry. *Social Epistemology*, 35(5), 441-460. doi:10.1080/02691728.2021.1913661
- Cullen-Knox, C., Haward, M., Jabour, J., Ogier, E., & Tracey, S. R. (2017). The social licence to operate and its role in marine governance: Insights from Australia. *Marine Policy*, 79, 70-77. doi:<https://doi.org/10.1016/j.marpol.2017.02.013>
- Department of Finance. (2022). *Australian Government Cost Recovery Guidelines (RMG 304)*. Canberra Retrieved from <https://www.finance.gov.au/publications/resource-management-guides/australian-government-cost-recovery-guidelines-rmg-304#-part-i-australian-government-cost-recovery-policy>
- Fonner, R., & Sylvia, G. (2015). Willingness to Pay for Multiple Seafood Labels in a Niche Market. *Marine Resource Economics*, 30(1), 51-70. doi:10.1086/679466
- Gray, W. B., & Shimshack, J. P. (2011). The Effectiveness of Environmental Monitoring and Enforcement: A Review of the Empirical Evidence. 5(1), 3-24. doi:10.1093/reep/req017
- Hall, D. (1995). *Cost Recovery in South Australia's Commercial Fisheries. South Australian Fisheries Management Series, Paper No.7* Retrieved from Adelaide, South Australia:
- Harte, M. (2007). Funding commercial fisheries management: Lessons from New Zealand. *Marine Policy*, 31(4), 379-389. doi:<https://doi.org/10.1016/j.marpol.2006.11.002>
- Hatcher, A., Jaffry, S., Thébaud, O., & Bennett, E. (2000). Normative and Social Influences Affecting Compliance with Fishery Regulations. *Land Economics*, 76(3), 448-461. doi:10.2307/3147040
- Haynes, J., Geen, G., & Wilks, L. (1986). *Beneficiaries of fisheries management*. Retrieved from Canberra:
- Heyes, A. (2000). Implementing Environmental Regulation: Enforcement and Compliance. *Journal of Regulatory Economics*, 17(2), 107-129. doi: <https://doi.org/10.1023/A:1008157410380>
- Kaufmann, B., & Geen, G. (1997). Cost-recovery as a fisheries management tool. *Marine Resource Economics*, 12(1), 57-66.
- Kelly, R., Pecl, G. T., & Fleming, A. (2017). Social licence in the marine sector: A review of understanding and application. *Marine Policy*, 81, 21-28. doi:<https://doi.org/10.1016/j.marpol.2017.03.005>
- Kim, G., Duffy, L. N., Jodice, L. W., & Norman, W. C. (2017). Coastal Tourist Interest in Value-Added, Aquaculture-Based, Culinary Tourism Opportunities. *Coastal Management*, 45(4), 310-329. doi:10.1080/08920753.2017.1327345
- MacDonald, P. A., Murray, G., & Patterson, M. (2015). Considering social values in the seafood sector using the Q-method. *Marine Policy*, 52, 68-76. doi:<https://doi.org/10.1016/j.marpol.2014.10.029>
- Mayo, W. (1979). Rent Royalties. *Economic Record*, 55(3), 202-213. doi:<https://doi.org/10.1111/j.1475-4932.1979.tb02222.x>
- McClenachan, L., Dissanayake, S. T. M., & Chen, X. (2016). Fair trade fish: consumer support for broader seafood sustainability. *Fish and Fisheries*, 17(3), 825-838. doi:<https://doi.org/10.1111/faf.12148>
- McDonald, G., Mangin, T., Thomas, L. R., & Costello, C. (2016). Designing and financing optimal enforcement for small-scale fisheries and dive tourism industries. *Marine Policy*, 67, 105-117. doi:<https://doi.org/10.1016/j.marpol.2016.02.003>
- Ministry for Primary Industries. (2018). *Cost recovery at MPI: Findings from the First Principles Review of MPI's cost recovery arrangements*. Retrieved from Wellington, Nw Zealand: <https://www.mpi.govt.nz/dmsdocument/30852-Cost-recovery-at-MPI-Findings-from-the-First-Principles-Review-of-MPIs-cost-recovery-arrangements>
- Mohammadi, Z., Bhati, A. S., & Jerry, D. (2022). A Pre-Science Style Model of Aquaculture Tourism Businesses. *Tourism Planning & Development*, 1-9. doi:10.1080/21568316.2022.2135133
- MRAG Asia Pacific. (2018). *Cost recovery guidelines for monitoring services*. Retrieved from Toowong, Queensland: https://em4.fish/wp-content/uploads/2021/01/SB2551-WWF-EM-Cost-Recovery_Final.pdf

- Office of the Prime Minister. (2023). The Norwegian Government's proposed resource rent tax on aquaculture [Press release]. Retrieved from <https://www.regjeringen.no/en/aktuelt/the-norwegian-governments-proposed-resource-rent-tax-on-aquaculture/id2968430/>
- Oyanedel, R., Gelcich, S., & Milner-Gulland, E. J. (2020). Motivations for (non-)compliance with conservation rules by small-scale resource users. *Conservation Letters*, 13(5), e12725. doi:<https://doi.org/10.1111/conl.12725>
- Paredes, S., Pascoe, S., Coglan, L., & Richards, C. (2021). Increasing Local Fish Consumption: A Bayesian Belief Network Analysis. *Journal of International Food & Agribusiness Marketing*, 33(1), 104-121. doi:10.1080/08974438.2020.1860853
- Pascoe, S., Paredes, S., & Coglan, L. (2023a). Do "local" markets offer new opportunities to Australian seafood producers? *Fisheries Research*, 263, 106691. doi:<https://doi.org/10.1016/j.fishres.2023.106691>
- Pascoe, S., Paredes, S., & Coglan, L. (2023b). The Indirect Economic Contribution of Fisheries to Coastal Communities through Tourism. *Fishes*, 8(3), 138.
- Pascoe, S., Schrobback, P., Hoshino, E., & Curtotti, R. (2022). Impact of changes in imports and farmed salmon on wild-caught fish prices in Australia. *European Review of Agricultural Economics*, 50(2), 335-359. doi:10.1093/erae/jbac003
- PIRSA. (2020). *PIRSA Cost Recovery Policy*. Adelaide Retrieved from https://pir.sa.gov.au/_data/assets/word_doc/0008/314639/Cost_Recovery_Policy.docx
- PIRSA. (2022). *Fisheries and Aquaculture Cost Recovery Framework*. Retrieved from Adelaide: https://pir.sa.gov.au/_data/assets/pdf_file/0006/427389/fisheries-aquaculture-cost-recovery-framework.pdf
- PIRSA Aquaculture. (2002). *Cost Recovery Policy: Discussion Paper*. In: 'Cabinet Subjects for Consideration, 11th June 2002, Cost Recovery Aquaculture, (Ref MAFF0015/02CS)'. Retrieved from Adelaide: <https://www.dpc.sa.gov.au/documents/rendition/B17710>
- Schrobback, P., Pascoe, S., & Zhang, R. (2019). Market Integration and Demand for Prawns in Australia. 34(4), 311-329. doi:10.1086/706375
- Scott, A. (1979). Development of Economic Theory on Fisheries Regulation. *Journal of the Fisheries Board of Canada*, 36(7), 725-741. doi:10.1139/f79-111
- SG Heilbron Economic & Policy Consulting. (2023a). *Aquaculture Cost Recovery Review. Report for the Department of Primary Industries and Regions South Australia*. Retrieved from Elwood, Victoria (Commercial in Confidence):
- SG Heilbron Economic & Policy Consulting. (2023b). *Fisheries Cost Recovery Review. Report for the Department of Primary Industries and Regions South Australia*. Retrieved from Elwood, Victoria (Commercial in Confidence):
- Squires, D., Clarke, R., & Chan, V. (2014). Subsidies, public goods, and external benefits in fisheries. *Marine Policy*, 45, 222-227. doi:<https://doi.org/10.1016/j.marpol.2013.11.002>
- Stigler, G. J. (1970). The Optimum Enforcement of Laws. *Journal of Political Economy*, 78(3), 526-536.
- Stokes, K., Gibbs, N., & Holland, D. (2006). New Zealand's cost-recovery regime for fisheries research services: an industry perspective. *Bulletin of Marine Science*, 78(3), 467-485.
- Treasurer and Minister for Trade and Investment. (2022). *New progressive royalties for record Queensland coal prices*. Brisbane: Queensland Government Retrieved from <https://statements.qld.gov.au/statements/95467>
- Tuynman, H., & Dylewski, M. (2022). *Australian fisheries and aquaculture statistics 2021*. Retrieved from Canberra:
- Webley, J., & Probst, T. (2020). *Allocation of fisheries management costs to Queensland's commercial fisheries for the 2017-18 and 2018-19 financial years: The process of allocation*. Retrieved from Brisbane: <https://era.daf.qld.gov.au/id/eprint/7853/1/FQFisheryManagementCostAllocationMethods.pdf>

