



tasmarineprotection@yahoo.com

<https://www.tamp.org.au/>



noff7112@yahoo.com

<https://neighboursoffishfarming.org.au/>

Submission to the House of Representatives
Standing Committee on Agriculture and
Water Resources
Inquiry into the Australian Aquaculture Sector

by
Tasmanian Alliance for Marine Protection
and
Neighbours of Fish Farming
May 2021

Fundamentally the social licence to operate is a risk-management issue

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Executive Summary & Recommendations

Terms of Reference (a) Nature and current status of sector (section 1)

The principal long-term weaknesses and threats to the Tasmanian salmon industry are clear and overwhelming: rising ocean temperatures, inadequate regulation, and the escalating evidence of impacts on marine life, coastal amenity and consequent loss of social licence. Such a combination of factors significantly reduces financial sector willingness to risk investment without significant strategic change.

We recommend the Federal Government urgently take steps to support and encourage the industry to move as rapidly as possible to fully self-contained onshore facilities, while expanding their overseas and mainland markets on the basis of Tasmania's environmental reputation.

This will:

- Minimise or eliminate challenges to the industry's social licence and adverse impact on tourism and hospitality
- Insulate the Tasmanian industry from the effects of ocean warming
- Maintain and grow the industry's importance to the Tasmanian economy
- Facilitate Australian and overseas market expansion based on Tasmania's environmental reputation
- Facilitate transition to a more equitable licensing return to governments.

Terms of Reference (b) Opportunities & barriers to expansion (section 2)

The Australian salmon industry will have to diversify its market base and scope. The outcome will depend on Tasmania maintaining its environmental reputation, utilising its natural resources sustainably, and further developing a skilled workforce. We submit there is only one route to a successful outcome: transition to self-contained, onshore RAS facilities.

We recommend that the Australian Government support and encourage research and investment into expansion into additional markets, and to broaden the range and volume of products available.

This will:

- Complement our recommendations in section 1 in support of fully self-contained, land-based operations
- Minimise the risks associated with reliance on a single market, here or overseas
- Optimise investment to date in the existing strategic exploitation of Tasmania's environmental reputation, natural resources and workforce skills
- Make it easier to protect and develop enhanced social licence and attract financial support for expansion.

Terms of Reference (c) Increasing effectiveness of regulatory frameworks (section 3)

Clearly something is wrong. The industry claims it meets existing standards, yet escapes, mortalities, marine debris large and small, negative benthic and marine life impacts, community complaints and regulatory failure continue on a regular basis with a consequent loss of social licence.

Only two competing conclusions can be drawn:

- The industry is not in fact meeting existing standards, in which case regulatory processes must be greatly improved and penalties for breaches increased.
- The industry is complying with existing standards that are manifestly inadequate and need a complete overhaul.

Either case, coupled in Tasmania with the lack of transparency, represents a serious threat to the industry's social licence, and in turn, to its ability to attract investment.

We recommend that the Federal Government introduce stricter, rationalised national science-based standards, transparently developed, regulated, and enforced by an independent agency fully funded by mandatory, government-controlled industry levies.

This will:

- Increase public confidence in the independence and transparency of industry regulation
- Simplify compliance for organisations operating across multiple states and territories.

Terms of Reference (d) Ability to access and commercialise new innovations (section 4)

To keep pace with the global industry and protect against international challenges on its own doorstep, the Tasmanian industry needs to invest in innovative technology, specifically RAS, opening the door to investment vehicles focused on Ethical, Social and Corporate Governance (ESG) as well as positioning the industry to regain community trust (social licence).

We recommend that the Federal and State governments should introduce tax, regulatory and other incentives - both carrot and stick - that lead to a rapid, irreversible move on-shore to Reticulating Aquaculture Systems (RAS). This should include financial and other incentives and support for innovation, research, capital investment, infrastructure development, implementation of nation-wide standards, and employment reskilling.

This will:

- Improve the Tasmanian industry's access to investment funds
- Maintain the Tasmanian industry as principal supplier to the Australian market
- Provide a social licence platform for expansion within Australia and overseas.

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1. Nature and current status of sector

1) Introduction

This section relates to Terms of Reference (a) to inquire and report on the nature and current status of Australia's aquaculture sector. We have based this section on a standard [SWOT analysis](#) (strengths, weaknesses, opportunities, threats), a proven method of starting a discussion, and it necessarily overlaps with other sections of the terms of reference.

2) Strengths

- The industry has been successful in Tasmania, and in mainland Australian markets, by promoting a fresh, green, clean image for a high end, quality product produced in pristine waterways.
- The industry provides significant local employment in specific areas such as the south-east region (Huon Valley, D'Entrecasteaux Channel, Bruny Island)¹, although State-wide it is less than 1%,² and certainly less than repeated industry statements: former ANU chief economist Graeme Wells' analysis shows that industry claims of "supporting 12,000 jobs" are vastly exaggerated³.

3) Weaknesses

- **Narrow market focus** – Australian salmon is marketed as a high end, quality product. It is marketed mostly to the mainland. In 2015 Australian farmed salmonid production amounted to 0.2% of the world catch⁴. Overseas, salmon is increasingly marketed as a low-end commodity product, much as chicken has moved down market and expanded hugely in Australia since the 1950's.⁵
- **Distance from markets** – Tasmanian production is not close to its main markets in Sydney and Melbourne, let alone overseas. This is counterbalanced by marketing reliance on Tasmania's environmental reputation.
- **Persistence with increasingly obsolete methodologies** (inshore and shallow offshore open net feedlots)⁶, with progressively high-tech facilities which reduce employment.
- **Persistence with Atlantic salmon** in preference to native fish types^{7 8}, in the face of ocean warming⁹ and disease control problems to which non-native Atlantic salmon are more susceptible.

¹ [Fishing for compliments - Fishing in the Tasmanian economy](#). The Australia Institute, 2018: caged aquaculture provides the majority of fishing and aquaculture employment in the South East, but in the northern and western regions fishing and offshore longline/rack aquaculture provide the majority of jobs.

² [Making mountains out of minnows: salmon in the Tasmanian economy](#), The Australia Institute 2019, page 1

³ *Salmon job stats are a bit too fishy - Graeme Wells challenges big calls about the benefits of fish farms*. [Hobart Mercury](#): Talking Point 25, 21 May 2021 (paywalled, but image scan and transcription in Attachment 1).

⁴ [Australia's seafood trade](#). Department of Agriculture, 2015, page 10

⁵ [History of the Poultry Industry in Australia](#). Santrev, viewed online 21 May 2021. 3 million chickens in 1950/51, 653 million in 2016/17.

⁶ [The end of salmon farming as we know it](#) - Atle Eide, former head of two of the world's largest aquaculture companies, quoted in *Intrafish* 8 May 2021

⁷ [Kingfish - Australia's new potential white fleshed salmon?](#) Australia. Dept of Agriculture, (no date, 2019?)

⁸ [Market makeover for Australian salmon](#). Fish Magazine, 22-4, 2014

⁹ [Can salmon farming cope with climate change?](#) The Fish Site, December 2019

- **Diminishing social licence** – there are widespread and increasing concerns in Tasmania, and worldwide,^{10 11 12} about waste, noise and light pollution, and impact on wildlife¹³, all with resulting loss of social licence. This has an adverse impact on Tasmania's pristine image, and hence on the far more important tourism and hospitality sectors^{14 15} which rely on Tasmania's environmental reputation. This is also seen in public support for acclaimed writer and investigative journalist Richard Flanagan's book [Toxic](#), published only in March 2021, now in its fourth printing and topping best seller lists¹⁶.
- **Inadequate financial return to the State government** – in the 2013-2018 period studied by the Australia Institute, annual lease and licence fees amounted to 0.1% of the total farmgate production of the salmon industry in Tasmania, and 0.02% of total state revenue. Changing the current licensing regime to one similar to the Norwegian system could return between \$707 million and \$2 billion¹⁷.
- **Poor government and industry regulation and oversight** - the industry is controlled by several Federal and Tasmanian Acts, marine farming development plans¹⁸, and voluntary standards developed by accreditation agencies funded by their member organisations. However there is widespread scepticism about State Government regulation¹⁹ and transparency, coupled with suspicion of undue industry influence²⁰. There are significant inconsistencies across the conditions for all development plans and little evidence that these are enforced. Voluntary standards developed by member-funded accreditation agencies have little credibility^{21 22}. We discuss this in more detail in section 3.

4) Opportunities

- **Potential to move to fully contained, closed loop onshore facilities** (Recirculating Aquaculture Systems (RAS)) which have very low noise, light and waste pollution impact²³, little or no impact on native wildlife, support a clean green image, and would not adversely impact the reputation and earnings of Tasmania's much higher-benefit tourism and hospitality industries. (We must here point out that none of the industry's land-based sites in Tasmania are truly closed loop, and that ongoing discharges into water catchment and otherwise pristine areas are cause for concern, and need stricter standards and regulation²⁴.)

¹⁰[The end of salmon farming as we know it](#) - Atle Eide, former head of two of the world's largest aquaculture companies, quoted in *Intrafish* 8 May 2021

¹¹ [Millions of salmon die in the fjords of southern Chile](#). Patagon journal, 12 April 2021

¹² [Exposed: the true cost of the Scottish salmon industry](#). 2 min 49 sec *YouTube* video, March 2021.

¹³ [War on seals: The 'cruel measures' used by Tasmania's salmon farming industry](#), by Richard Flanagan (extract from *Toxic*). The New Daily, 16 May 2021.

¹⁴ [Making mountains out of minnows: salmon in the Tasmanian economy](#), The Australia Institute 2019

¹⁵ [Leading Tasmanian restaurant drops farmed fish from menus](#). ABC Radio, 4 min 17 secs, 3 May 2021

¹⁶ [Fullers Bookshop](#), Hobart. *Fullers Weekly* (email), 23 April 2021 and 22 May 2021

¹⁷ [Making mountains out of minnows: salmon in the Tasmanian economy](#), The Australia Institute 2019, page 4

¹⁸ [DPIPWE. Marine farming - aquaculture](#). It is not at all obvious how to locate information on specific leases.

¹⁹ [Tasmania's salmon industry expansion has no sound scientific basis, expert who quit review panel says](#). The Guardian, 28 April 2021.

²⁰ [Flanagan's anti-salmon push growing, as EPA emails to Tassal revealed](#). ABC News, 29 April 2021.

²¹ [Global Review of the Aquaculture Stewardship Council's Salmon Standard](#). Seachoice, 2018 showed that only a small proportion of farms follow the eco-label's stipulated criteria, yet they are still being certified.

²² [David versus Goliath: Tasmanian environment groups demand an end to salmon certifier's conflict of interest](#). Environment Tasmania, 2017.

²³ [The salmon you buy in the future may be farmed on land](#). BBC News, 26 April 2021

²⁴ [Water quality monitoring upstream and downstream of smolt production facilities on the upper Derwent and Florentine rivers](#). Environment Tasmania, April 2019.

- **Potential to broaden markets here and overseas**, based on Tasmania’s environmental reputation and possibly by the inclusion of Australian native fish species.

5) Threats

- **Ocean warming** reducing long term viability of shallow water open net feedlots in Tasmania²⁵.
- **Increasing awareness of pollution and other problems threatens social licence**²⁶, and increases the reluctance of the financial sector to invest (as has occurred for example, in the coal industry^{27 28})
- **Much larger overseas players** may move into the Australian market, but would undoubtedly set up closed-loop onshore facilities close to the Sydney and Melbourne markets, not in Tasmania. They have the capacity to swamp Tasmanian output and market to a lower-price sector. They would not however have the advantage of Tasmania’s environmental reputation, its 100% renewable energy, abundant water supplies, less costly set-up and experienced workforce.

6) Conclusion and recommendations

The principal long-term weaknesses and threats to the Tasmanian salmon industry are clear and overwhelming: rising ocean temperatures, inadequate regulation, and the escalating evidence of impacts on marine life, coastal amenity and consequent loss of social licence. Such a combination of factors significantly reduces financial sector willingness to risk investment without significant strategic change.

We recommend the Federal Government urgently take steps to support and encourage the industry to move as rapidly as possible to fully self-contained onshore facilities, while expanding their overseas and mainland markets on the basis of Tasmania’s environmental reputation (see also section 4(4)).

This will:

- Minimise or eliminate challenges to the industry’s social licence and adverse impact on tourism and hospitality
- Insulate the Tasmanian industry from the effects of ocean warming
- Maintain and grow the industry’s importance to the Tasmanian economy
- Facilitate Australian and overseas market expansion based on Tasmania’s environmental reputation
- Facilitate transition to a more equitable licensing return to governments.

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²⁵ [Can salmon farming cope with climate change?](#) The Fish Site, December 2019.

²⁶ [The end of salmon farming as we know it](#) - Atle Eide, former head of two of the world’s largest aquaculture companies, quoted in *Intrafish* 8 May 2021

²⁷ [Adani mine contractor says no insurer will cover its work on project](#) ABC News 14 May 2021

²⁸ [Over 100 Global Financial Institutions Are Exiting Coal, With More to Come](#). Institute for Energy Economics and Financial Analysis, 2019

2. Opportunities & barriers to expansion

1) Introduction

This section relates to Terms of Reference (b) to inquire and report on opportunities and barriers to the expansion of the aquaculture sector, including ability to access capital and investment.

2) Market expansion

A recent analysis of the world-wide salmon market for 2020-2025²⁹ suggests possible areas for growth and innovation, including expansion and investment in the Chinese market.

We discuss the suggestions on innovation in section 4.

3) The Chinese market

In April 2021 the Global Times³⁰ reported that Australian penetration of the Chinese market has been increasing, largely because our geographic proximity gives us delivery cost and speed advantages over Chile and Norway, however they do not expect this to continue as our limited production capacity is unable to keep up with Chinese demand.

This is overlaid by the current trade imbroglio between China and Australia, which has essentially put a hold on any expansion, and threatens current levels of activity³¹. The Australian salmon industry, along with everyone else, will have to diversify away from and in addition to the Chinese market. Doing so is sound strategy even when good trading relationships are re-established, to minimise the risk of reliance on a single market.

4) Other market opportunities

In section 1(3) we discussed how Tasmanian salmon has been sold as a high-end, quality product, and that it is sold mostly on the Australian mainland, so there are opportunities to diversify the product range to add lower-end products, and to broaden geographic scope, particularly in regions nearer to us than our competitors in Europe and the Americas.

5) Financial barriers

Without sound sustainability credentials and social licence, it will become harder to attract capital investment, insurance and other resources from the financial sector: in 2020 Larry Fink, the founder and chief executive of the world's largest asset manager BlackRock, announced that his firm would make investment decisions with environmental sustainability as a core goal³². We discussed in section 1(5) how the financial sector is increasingly reluctant to invest in coal. Tasmanian salmon's clean green reputational strategy must be protected and enhanced to attract the investment needed to move to onshore facilities to support expansion.

²⁹ [Salmon Market - Growth, Trends, and Forecast \(2020-2025\)](#). Research and Markets, August 2020.

³⁰ [Australian salmon supplies to China gaining market share, but trend to be temporary](#). Global Times, 7 April 2021.

³¹ [Australia China trade war and its implications](#). Intuition, 13 April 2021.

³² [Climate Crisis Will Reshape Finance](#). NY Times, 14 January 2020.

6) Conclusion and recommendations

Clearly the Australian salmon industry will have to diversify its market base and scope. The outcome will depend on Tasmania maintaining its environmental reputation, utilising its natural resources sustainably, and further developing a skilled workforce. We submit there is only one route to a successful outcome: transition to self-contained, onshore RAS facilities.

We recommend that the Australian Government support and encourage research and investment into expansion into additional markets, and to broaden the range and volume of products available.

This will:

- Complement our recommendations in section 1 in support of fully self-contained, land-based operations
- Minimise the risks associated with reliance on a single market, here or overseas
- Optimise investment to date in the existing strategic exploitation of Tasmania's environmental reputation, natural resources and workforce skills
- Make it easier to protect and develop enhanced social licence and attract financial support for expansion (see also section 4).

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3. Increasing effectiveness of regulatory frameworks

1) Introduction

This section relates to Terms of Reference (c) to inquire and report on opportunities to streamline and increase the effectiveness of the current regulatory frameworks that govern aquaculture activities in Australia.

2) Current situation

As outlined in section 1(3), the industry is regulated by several Federal and Tasmanian Acts and marine farming development plans³³, and voluntary adoption of standards developed by a variety of accreditation agencies funded by their member organisations.

However there is widespread scepticism about State Government regulation, especially related to the under resourced and under-funded Tasmanian Environmental Protection Authority (EPA) and its advisory committees³⁴, coupled with evidence that the State Government is susceptible to undue industry influence³⁵. There is only token transparency³⁶. This appears to extend a situation going back fifty years in Tasmania in relation to hydro-electricity dams, woodchip mills and gambling³⁷.

There are significant inconsistencies and little standardisation across the conditions for all the development plans – indeed it is not easy to find detailed information on State Government websites about individual leases - and it is hard to identify any evidence showing that these conditions are monitored and enforced, especially when leases are being renewed.

Voluntary standards developed by member-funded accreditation agencies have little credibility^{38 39}. There are possibly four competing agencies⁴⁰, and at least one Tasmanian company appears to have changed agencies. Some accreditation is on a per lease basis, and many leases are not covered. Detailed information on leases and audits is only available to member organisations. All this leads to suspicion of accreditation shopping, and questions about why some leases are not accredited at all.

³³ [DPIPWE. Marine farming - aquaculture](#). It is not at all obvious how to locate information on specific leases.

³⁴ [Tasmania's salmon industry expansion has no sound scientific basis, expert who quit review panel says](#). The Guardian, 28 April 2021.

³⁵ [Flanagan's anti-salmon push growing, as EPA emails to Tassal revealed](#). ABC News, 29 April 2021.

³⁶ [TAMP accuses the government of hiding from voters plans to introduce massive industrial salmon feedlots to new areas of the Tasmanian coastline](#). April 2021.

³⁷ [No risk: The family who own Tasmania's gambling industry](#). SMH 2 February 2018.

³⁸ [Global Review of the Aquaculture Stewardship Council's Salmon Standard](#). Seachoice, 2018 showed that only a small proportion of farms follow the eco-label's stipulated criteria, yet they are still being certified.

³⁹ [David versus Goliath: Tasmanian environment groups demand an end to salmon certifier's conflict of interest](#). Environment Tasmania, 2017.

⁴⁰ [The Aquaculture Stewardship Council](#), [The Global Aquaculture Alliance](#) and its [Best Aquaculture Practices](#) certification group, and [GlobalGAP](#).

There are regular minor and major failures in the system⁴¹, but the outstanding example is overstocking in Macquarie Harbour⁴², where the EPA confirmed that more than a million fish died. An endangered species, the Maugean skate⁴³, was driven close to extinction, and World Heritage Areas were damaged. So severe was the impact that the RSPCA will not accredit salmon aquaculture in Macquarie Harbour⁴⁴.

There were no penalties imposed, and a report by CSIRO scientists said that *the broader implications of the case study are that the science related to the environmental impacts of an industry needs to be undertaken by scientists in secure positions funded independently of industry and government*⁴⁵. The leading scientific body researching the Tasmanian industry is [IMAS](#), part of the University of Tasmania, which has long had a close relationship with the industry⁴⁶.

3) Conclusion and Recommendations

Clearly something is wrong. The industry claims it meets existing standards⁴⁷, yet escapes, mortalities, marine debris large and small, negative benthic and marine life impacts, community complaints and regulatory failure continue on a regular basis with a consequent loss of social licence.

Only two competing conclusions can be drawn:

- The industry is not in fact meeting existing standards, in which case regulatory processes must be greatly improved and penalties for breaches increased.
- The industry is complying with existing standards that are manifestly inadequate and need a complete overhaul.

Either case, coupled in Tasmania with the lack of transparency, represents a serious threat to the industry's social licence, and it turns, to its ability to attract investment.

We recommend that the Federal Government introduce stricter, rationalised national standards, transparently developed, regulated, and enforced by an independent agency fully funded by mandatory, government-controlled industry levies.

This will:

- Increase public confidence in the independence and transparency of industry regulation
- Simplify compliance for organisations operating across multiple states and territories.

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⁴¹ [Huon loses up to 130,000 fish in second escape in 9 days](#). Fishfarming Expert, December 2020.

⁴² [Macquarie Harbour salmon: 1.35 million fish deaths prompt call to 'empty' waterway of farms](#). ABC News, 29 May 2018.

⁴³ [Vulnerability of the endangered Maugean skate population to degraded environmental conditions in macquarie harbour](#). IMAS research "funded by . . . Tassal, Petuna, Huon Aquaculture . . ." viewed online, 23 May 2021.

⁴⁴ [RSPCA will not approve operations in Macquarie Harbour](#). Huon Aquaculture, viewed online 24 May 2021.

⁴⁵ [The reverse precautionary principle: science, the environment and the salmon aquaculture industry in Macquarie Harbour, Tasmania, Australia](#). CSIRO, 2017.

⁴⁶ [Tasmanian salmon – the research story](#). IMAS website viewed online, 23 May 2021.

⁴⁷ See websites of [Huon](#), [Tassal](#), [Petuna](#)

4. Ability to access and commercialise new innovations

1) Introduction

This section relates to Terms of Reference (d) to inquire and report on the ability for businesses to access and commercialise new innovations to expand aquaculture.

2) Possible Innovations

A recent analysis of the world-wide salmon market for 2020-2025⁴⁸ states that *as demand for salmon continues to strengthen globally, a combination of geographic and regulatory constraints on traditional open-net pen farming has limited the ability of producers to keep pace*. They suggest three possible areas for growth and innovation:

- Expansion and investment in the Chinese market (discussed in section 2)
- Genetically engineered salmon
- RAS closed loop systems.

3) Genetically engineered salmon

GMO is banned in Tasmania, to preserve the state's environmental reputation⁴⁹. It faces strong public opposition elsewhere in the world⁵⁰ as well as litigation and regulatory hurdles⁵¹. This is supported by reaction to industry's use of non-GMO triploid salmon to encourage faster growth faces issues of mutation⁵², accusations about "frankenfish"⁵³ and may soon be banned where salmon farming was first developed, Norway, because of animal welfare concerns⁵⁴.

For these reasons we do not see genetic modification as a practical avenue for innovation in Tasmania.

4) RAS closed loop systems

We see the tide turning for recirculating aquaculture systems (RAS) and see potential for this emerging technology to change the aquaculture game over the next decade.

Dutch multinational lender Rabobank, 2019⁵⁵

The global aquaculture industry is changing quickly, driven on the one hand by technological innovation and on the other by the demands of social, governmental and environmental expectations. Recirculating Aquaculture Systems (RAS) is now attracting serious rather than speculative finance. By some estimates, RAS projects are now aiming at producing a massive

⁴⁸ [Salmon Market - Growth, Trends, and Forecast \(2020-2025\)](#). Research and Markets, August 2020.

⁴⁹ [Tasmania extends ban on GMOs](#). GrainCentral, 2017.

⁵⁰ Nowak, Barbara. [Aquatic animal health issues](#). Australian Pesticides and Veterinary Medicines Authority, 2017.

⁵¹ [US firm AquaBounty Technologies says that its transgenic fish has hit the market after a 25-year wait](#). Nature, 2017.

⁵² [Chromosome aberrations in pressure-induced triploid Atlantic salmon](#). BMC Genomic Data, June 2020.

⁵³ [The future of Frankenfish](#). National Fisherman, 2017.

⁵⁴ [Triploid salmon use to be paused in Norway due to welfare concerns](#). Fishfarming Expert, 30 April 2021.

⁵⁵ [Aquaculture 2.0: RAS is driving change – land-based farming is set to disrupt salmon](#). Rabobank, 2019.

1.8 million tonnes annually compared with global production in 2020 of 2.7 million tonnes, and some \$US 5 billion is reportedly tied up in RAS projects.⁵⁶

The size and scope of RAS facilities is also increasing in Europe and the US, Atlantic Sapphire outside Miami being the US's current largest production facility with plans to produce 220,000 tonnes annually in ten years⁵⁷. This would be close to double the whole of Tasmania's proposed production in the same time period.

Even the land-bound, desert state of Nevada has a 60,000-tonne facility in planning in Reno⁵⁸.

Each year the global industry press reports multiple breakthroughs that remove obstacles to efficient, environmentally sound land-based production⁵⁹.

Rabobank warns salmon industry operators still reliant on 20th-century practices will face an uphill battle to remain in the game as RAS technology and investment advances into the global market: *If the risks within RAS operations are managed effectively, in our view, RAS will disrupt aquaculture trade flows, supply chains, and the marketing of salmon within the next decade*⁶⁰.

One of Norway's most experienced executives, Atle Elde, former CEO of [Mowi](#), the world's largest salmon producer, predicts the end of open-net fish farming "as we know it" within ten years:

[Environmental, social and governance] needs to be higher on our agenda ... We probably won't have fully open, traditional netpens by 2030 ... Society's demands have shifted too much, and technological advances will make it profitable to change .
..⁶¹

As Elde notes, the tide has turned on 20th-century aquaculture models because the community expectations and legal obligations of companies, CEOs and boards have changed.

Global investment and corporate practice are now being driven by the principles of Ethical, Social and Corporate Governance (ESG). Some \$31 trillion of assets across five of the world's major markets are invested based on ESG principles⁶².

Investment analyst, BNP Paribas, notes ESG principles are major factors in diminishing financial risk and vulnerability to legal action:

Quite simply, it is worth it. [ESG investment] Financially, the results from investing with an appreciation of the environment, high social standards and responsible business conduct – the pillars of sustainable investing – can be attractive. Investing sustainably mitigates risks, for example, by steering clear of companies that are exposed to pollution lawsuits, labour unrest, shareholder revolts or other events that can damage their reputation and their economic results. So, taking into account

⁵⁶ [Partial list of recent land-based salmonid farms globally](#). Newfoundland Coalition for Agricultural Reform, 2019.

⁵⁷ [The salmon you buy in the future may be farmed on land](#). BBC News, 25 April 2021.

⁵⁸ [Israeli RAS technology to be deployed in Nevada](#). Atlantic Salmon Federation, 2020.

⁵⁹ [Israeli firm's 'plug-and-play' RAS solution attracts investment](#). Global Aquaculture Alliance, 2019.

⁶⁰ [Aquaculture 2.0: RAS is driving change – land-based farming is set to disrupt salmon](#). Rabobank, 2019.

⁶¹ [The end of salmon farming as we know it?](#) Intrafish, 8 May 2021.

⁶² [Global Sustainable investment review, 2018](#).

*these risks, the long-term performance of a sustainable investment approach can be better than that of traditional investment approach.*⁶³

Furthermore, Australia's four major banks subscribe to the Equator Principles (EP) that guide risk management for investments in major projects. Even a cursory reading of the Equator Principles reveals the vulnerability of Tasmania's three salmon industry companies to accessing major finance for expansion from serious, long-term investors.

*The EPs have greatly increased the attention and focus on social/community standards and responsibility, including robust standards for indigenous peoples, labour standards, and consultation with locally affected communities within the Project Finance market. They have also promoted convergence around common environmental and social standards. Multilateral development banks, including the European Bank for Reconstruction & Development, and export credit agencies through the OECD Common Approaches are increasingly drawing on the same standards as the EPs.*⁶⁴

Finally, salmon industry boards are now increasingly vulnerable to legal action where their companies can be shown to have breached commonly accepted obligations that include ensuring an ethical base to a company's conduct and activities involving all stakeholders and managing risk⁶⁵.

The Tasmanian salmon industry's innovation future is thus in its own hands.

5) Conclusion and recommendations

To keep pace with the global industry and protect against international challenges on its own doorstep, the Tasmanian industry needs to invest in innovative technology, specifically RAS, opening the door to investment vehicles focused on Ethical, Social and Corporate Governance (ESG) as well as positioning the industry to regain community trust (social licence) (see also section 1).

We recommend that the Federal and State governments should introduce tax, regulatory and other incentives - both carrot and stick - that lead to a rapid, irreversible move on-shore to Reticulating Aquaculture Systems (RAS). This should include financial and other incentives and support for innovation, research, capital investment, infrastructure development, implementation of nation-wide standards, and employment reskilling.

This will:

- Improve the Tasmanian industry's access to investment funds
- Maintain the Tasmanian industry as principal supplier to the Australian market
- Provide a social licence platform for expansion within Australia and overseas.

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⁶³ [Why sustainable investing?](#) BNP Paribas, viewed online, 24 May 2021.

⁶⁴ [The Equator Principles](#), viewed online 24 May 2021.

⁶⁵ [Australian Institute of Company Directors](#), viewed online, 24 May 2021