



Peer Review of the Economic Contribution of Salmon Aquaculture to Scotland

Bridge Economics

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Bridge Economics was commissioned to Peer Review 'The Economic Contribution of Open Cage Salmon Aquaculture to Scotland: A Review of the Available Economic Evidence', prepared in January 2020 by Geoff Riddington, Alan Radford and Hervey Gibson and referred to here as the R&R Paper. The Peer Review considered the main elements and conclusions of the document and in doing so also reviewed the findings from two other assessments prepared by Imani Developments/Steve Westwood (2017) and Marsh (2019)¹.

The Peer Review was commissioned by SIFT and Salmon & Trout Conservation Scotland, both of whom have concerns about the exaggeration of claimed economic benefits deriving from the salmon aquaculture sector. They are concerned because the size of benefits attributable to the sector has the potential to skew the debate on how inshore waters should be managed, potentially influencing decision making in a way which is detrimental to the environment and/or the economy.

Exploratory work undertaken to assess economic impacts deriving from projects, businesses or sectors may be described as an Economic Impact Assessment, Cost Benefit Analysis, Cost Effectiveness Appraisal or anything else. The description given to the work is less important than the methodology which the work uses to assess impact. However any assessment which reports only the *gross* rather than the *net* impacts of an activity is necessarily partial because it does not consider the negative effects of the activity, but only the positive ones. The R&R Paper reprints various claims purporting to show the size or impact of the Scottish salmon aquaculture sector, including the papers by Imani Developments (2017) and Richard Marsh (2019). It states that the impacts claimed are partial, incomplete, unreliable, and are being used inappropriately, and that the Scottish Government cannot use the available evidence to assess whether the Scottish salmon aquaculture sector should be expanded.

¹ Imani Developments and Steve Westbrook, <http://imanidevelopment.com/wp-content/uploads/2017/08/Value-of-Scottish-Aquaculture-2017-Report.pdf>
Richard Marsh/Four Consulting (2019), Key Figures for Scottish Salmon, <https://d178ivhysawugh.cloudfront.net/1556530716/salmon-impact.pdf>

Assessments which focus only on income and employment effects, and/or on gross, rather than net effects, are still sometimes commissioned for specific audiences and/or to fulfil particular objectives. However we endorse the R&R Paper's view that such evidence is partial, incomplete and inappropriate for use in assisting public sector decision making. If the Scottish Government does propose to support expansion of the Scottish aquaculture sector then a proper assessment needs to be made. Any such assessment should be consistent with Green Book² guidance on the appraisal of policies, programmes and projects, and address the impact such an expansion would have on other parts of the economy, so that a clear and dispassionate assessment of the net impact can be seen.

In respect of the charges of 'unreliability' of claims levelled by the R&R Paper, these can also be supported. Based on the sizes of the estimates made in the Imani report, the lack of cognisance of negative externalities and the counterfactual, and the opaque data and methodology employed, we do not have confidence in the Imani estimates. Incorrect application of the multiplier also exaggerates the indirect effects given, and results in estimates that would be neither sufficiently accurate nor suitable to inform public sector decision making. Regarding the Marsh Paper, there is (necessarily) little methodological detail in the (4 page) report, and while we find the estimate of employment and turnover is likely to be reasonably accurate, again, there is an error in the application of the multiplier (causing indirect and induced effects to be exaggerated) and in the words of the R&R Paper, 'a failure to identify the alternative vision' (ie the counterfactual – or what would have happened anyway).

We found that the methodology applied in the R&R Paper to estimate the indirect and induced effects was the same as that used in the Imani and Marsh papers. While not unusual, the method employed did not reflect the preferred approach and therefore produced some inaccuracies. This meant that errors resulting from the way in which multipliers had been incorrectly applied in the Imani and Marsh papers were not highlighted. As the R&R Paper supplied only a direct estimate of output from the salmon aquaculture sector, without estimates of indirect and induced effects, multiplier/effect methodology was not relevant for output estimates. However, for income and GVA, indirect and induced effects were considered and the R&R Paper's preferred method was found to potentially overestimate these impacts by around a third. The same approach was used to estimate indirect and induced employment impacts, but despite the methodological differences, overall employment estimates were around the same as from the preferred approach.

It should be noted that these quantitative oversights, insofar as they affected the R&R Paper's critique of Imani and Marsh at all, would have resulted in a *more* rather than a less charitable assessment than was actually deserved. Furthermore, the consideration of indirect and induced impacts did not affect the qualitative findings of the R&R Paper, which is critical of the reliability of the published estimates, their completeness and partiality, and of their subsequent inappropriate use, each of which criticisms the Peer Review firmly endorses.

²https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf