**Terms of Reference – UK seafood waste valorisation Project**

1. **Background**

Seafood is a valuable commodity. Globally, nearly 3 billion people rely on seafood (wild caught and farmed) as their main source of animal protein[[1]](#footnote-2). The aquaculture and agricultural feed sectors also rely heavily on seafood, with more than 1/5 of the global wild-catch seafood going into the feed sector[[2]](#footnote-3). At the same time, seafood plays an important role in petfood, pharmaceutical and nutraceutical sectors.

The demand for seafood is increasing. Today, over 30% of global ‘fish’ stocks (fish, shellfish, and other types of edible sea life) are already overfished and aquaculture production continues to increase, now producing over half of seafood eaten globally[[3]](#footnote-4). Management of this finite stocks is critical to avoid further stock collapses, rebuilding of overfished stocks and to ensure such a valuable commodity is resilient to meet increasing demands despite increasing impacts from climate change.

Like other primary production sectors, seafood is associated with high levels of waste. It’s estimated that 57% of total wild caught seafood landed in the UK ends up as waste, where waste is classified as viscera, frames, trimmings, and shells[[4]](#footnote-5). The majority this waste is produced during onshore processing (35%), with a smaller percentage associated with at sea discarding and processing, though precise quantification is hindered by poor data availability[[5]](#footnote-6). It remains uncertain what percentage of this waste is inedible from a human consumption perspective. Waste associated with aquaculture production is also data poor, although in the UK, monthly on farm salmon mortality rates are recorded[[6]](#footnote-7). Seafood supply chains are commonly complex, with multiple stages of transportation and processing, but data on waste at each stage is largely not reported.

Whilst seafood ‘waste’ may not be considered edible from a human consumption perspective, what value does this readily available resource represent to the second biggest user of seafood: the feed sector? Can increased seafood circularity promote reductions in environmental and social impacts within the seafood sector – if so, how? How can increased circularity in the UK seafood sector be promoted through government policies, targets, innovation funding and greater collaboration across the seafood sector?

1. **Project Scope**

This review will focus on seafood ‘waste’ landed and produced (both marine and freshwater species) from the wild-caught, aquaculture and processing sectors in the UK.

1. **Overarching Purposes:**

This project aims to review current trends in seafood waste utilisation in the UK, building upon a previous Seafish report from 20015.

It seeks to bring circularity discussions into the seafood sector and across the aquaculture and agricultural feed sectors. In particular, it will consider the potential for seafood waste to replace wild-caught sources of fishmeal and fish oil in UK salmon feed.

This project will lead on from the Salmon feed Call to Action[[7]](#footnote-8) and workshop series that the Forum for the Future hosted in 2022, under the WWF-Tesco Partnership. It seeks to address one of the key areas of environmental and social impact in salmon aquaculture, around feed sustainability[[8]](#footnote-9),[[9]](#footnote-10).

This project will also align with the WWF Basket Marine outcome on feed, of ‘reducing fishmeal and oil usage to forage fish dependency ratio (FFDR) <1, by using sustainable fishmeal and fish oil replacements and increasing the use of trimmings (by-products)’. By highlighting the human edible value of seafood waste in the UK, the report will also feed directly into the WWF Basket Food Waste outcome, of ‘reducing food loss and waste in all aspects of the supply chain by 50%’, which has to date mainly focused on agricultural food loss and waste.

1. **Aims:**

The aims of this project are:

1. To provide updated information on the utilisation of seafood waste in salmon aquafeed.
2. To quantify what percentage of seafood waste is deemed edible for human consumption perspective.
3. To inform the UK governments on processes needed to increase circularity in the domestic seafood sector and to increase valorisation of seafood by-products. This could include policy reforms that will disincentivise disposal of valuable by-products across the wild-caught, aquaculture and processing sectors.
4. To engage and inform UK seafood sector to promote circularity in business practices and procedures.
5. **Objectives:**

The objectives of this report are:

* To assess the quantity and location of seafood waste produced in the UK from operations including the wild-capture, aquaculture, and processing sectors.
* To assess the current circularity of the seafood waste produced in the UK, in terms of utilisation and its end destination e.g., land-based animal feed, aquafeed, fertiliser, pet food etc.
* To identify the value of seafood waste, in terms of nutritional (e.g., in terms of omega-3 content, CaCO3 content in bivalve shells etc), environmental (e.g., carbon emission savings in feed), social (e.g., traceability).
* To assess the availability (supply) and demand of seafood waste in the UK. Where possible assess the geographic distribution of supply and demand and where existing circular systems exist.
* To determine what the current blockers are to increasing by-product utilisation.
* To develop recommendations on how key stakeholders (e.g., UK governments, policy markets, companies, and traders) can increase circularity within the UK seafood sector, whilst decreasing the environmental and social footprint of UK caught and produced seafood.

1. **Focal topics and methodology:**

The priority topics of interest of this report are:

Determine the current demand for seafood waste from the feed, aquafeed and pet food sectors and then establish what the current blockers are to increasing utilisation/uptake. This will include a section on the policy that currently supports this status quo, as well as standards that are promoting the increase in by-product utilisation. Where a country may demonstrate a better system than the UK, then this will be included as an exemplar example.

1. Present the current situation in the UK of seafood waste from the wild-catch, aquaculture, and processing sectors in terms of quantity and location:
2. A map to identify the quantity (total volume) of seafood waste produced in the UK and their destination (end point).
3. Supply chain mapping of the major companies involved in waste production, distribution, and repurposing/utilisation.
4. Example(s) of circular systems in seafood waste utilisation in the UK and how it compares to exemplar systems globally.
5. Identify the value in seafood waste:
6. Nutritional value – including the potential value of increased volume of edible food in human supply chain.
7. Environmental value e.g., carbon emission reduction potential, savings from not utilising forage fish.
8. Social value e.g., reduced risk of IUU from imported seafood.
9. Identify the current structures that support current seafood waste utilisation:
10. Blockers: Policy review where it can incentivise industry actors/companies/traders to utilise seafood waste from production/processing or that disincentivises disposal of seafood waste.
11. Cold chain regulations: storage and transport HACCP, cost of running and managing.
12. Standards promoting the increase in seafood waste utilisation.
13. Identify any global leaders where policy and private industry promote the use of seafood waste utilisation.
14. **Deliverables:**

The outputs of this study will be:

* A full review/report including focal topics for the UK seafood waste; recommendations for UK stakeholders including policy markets, corporates/companies and traders outlining a systemic approach towards increasing the level of circularity of seafood by-products within the UK’s seafood sector.
* A public facing summary review (no longer than 8-pages of text), to include infographic on UK seafood waste distribution and destination.

The methods used in this study should be replicable and scalable, such that the baseline data generated in this project can be compared against data gathered in subsequent years and can be adopted and upscaled by wider WWF offices.

The consultant will deliver a report of sufficient quality and depth so that the above mentioned aims and objectives of the project are met.

The consultant will provide, within the final report, a full description of the data and the date on which it was collected. Any uncertainties/limitations surrounding the accuracy of the data should also be highlighted. The final report and the data will be owned by WWF-UK but attributed to the contractor.

1. **Consultant identification**

Interested consultants should **submit a project proposal by 25th May 2023** and clearly outlines the proposed methodologies and how they meet all objectives listed in the ‘Objective’ section and that covers all the Priority Topics in the Focal topics & methodology sections. The proposal should also provide a realistic but ambitious timeline, resources allocation on delivering the report, CVs with relevant experience and any applicable charging.

1. **Project Management**

The project will be managed professionally and ensure timely completion of the deliverables. Communication with WWF-UK will be regular and include in-person and/or remote (e.g. email, telephone, Zoom, etc.) communications as required. At a minimum, a biweekly verbal update will be anticipated and there to be a presentation of interim findings/project updates. If a need is identified for *ad hoc* meeting(s), then this will be arranged between WWF-UK and the consultant.

Meetings (telecoms) may be required with other consultants who are undertaking similar work in the WWF network; this will be advised as the projects progress.

Coordinated by the Project manager, an internal WWF working group will be set up to provide guidance throughout the production of the report.

Project Manager: Lief Hendrikz, Sustainable Seafood Officer, WWF-UK

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1. **Budget and Fee Schedule and Payment:**

Up to £12,000 (+VAT) and the proposals should include total cost such as travel expenses.

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|  | **Payment** |
| Submission of the draft report | 50% |
| Acceptance of the final and summary report | 50% |

1. **Contracting with WWF-UK:**

It is our preference that an appointed external partner adopts our standards terms and conditions for engaging with us. These are included within the tender documents. Please confirm you are willing to accept these terms. Should you have any amends you wish to make, these will need to be discussed with the WWF-UK legal team.

WWF-UK asks all suppliers to comply with the Supplier Code of Conduct and WWF-UK 3rd Party Expenses Policy. Both documents are enclosed within the tender pack. Please confirm your acceptance of both.

All contracted suppliers are required to register on Panda Purchasing (WWF-UK’s PO and invoice system). Should you be successful in your bid, please confirm you will be willing to register on the system.

1. **Timeframe:**

The report is anticipated to be delivered within 3 months upon the contract is granted to the successful contractor(s).

1. FAO. The State of World Fisheries and Aquaculture 2016: Contributing to Food Security and Nutrition for All; FAO: Rome, Italy, 2016; p. 200 [↑](#footnote-ref-2)
2. Cashion, T., Le Manach, F., Zeller, D. and Pauly, D. (2017) Most fish destined for fishmeal production are food grade fish. Fish and Fisheries, 18(5): 1–8. Available at: <https://www.bloomassociation.org/wp-content/uploads/2017/02/Cashion_et_al-2017-Fish_and_Fisheries-1.pdf> [↑](#footnote-ref-3)
3. FAO (2020): <https://www.fao.org/3/ca9229en/ca9229en.pdf> [↑](#footnote-ref-4)
4. Uberoi, Ares, Hutton, and Ward (2022): [UK Fisheries Statistics - House of Commons Library (parliament.uk)](https://commonslibrary.parliament.uk/research-briefings/sn02788/)  [↑](#footnote-ref-5)
5. Seafish Report (2001): [Fish Waste Production in the UK - The quantities Produced and Opportunities for Better Utilisation (4).pdf](file:///C:/Users/LHendrikz/Downloads/Fish%20Waste%20Production%20in%20the%20UK%20-%20The%20quantities%20Produced%20and%20Opportunities%20for%20Better%20Utilisation%20(4).pdf) [↑](#footnote-ref-6)
6. Salmon Scotland (2023): <https://www.salmonscotland.co.uk/reports> [↑](#footnote-ref-7)
7. https://www.wwf.org.uk/sites/default/files/2022-10/The-future-of-sustainable-salmon-feed.pdf [↑](#footnote-ref-8)
8. Newton and Little (2018): [Mapping the impacts of farmed Scottish salmon from a life cycle perspective | SpringerLink](https://link.springer.com/article/10.1007/s11367-017-1386-8) [↑](#footnote-ref-9)
9. Changing Markets (2020): [What\_Lies\_Beneath\_full\_report.pdf (changingmarkets.org)](http://changingmarkets.org/wp-content/uploads/2020/11/What_Lies_Beneath_full_report.pdf) [↑](#footnote-ref-10)