

Iceland and the Faroe Islands: Exploring Their Resource Situation with the NFBA

The National Footprint and Biocapacity Accounts (NFBA) apply the same accounting methodology to every country. Once results are produced, they are reviewed (<https://www.footprintnetwork.org/content/uploads/2026/03/Scoring-output-data-2026-03-13.pdf>) to catch anomalies which are both extreme and implausible. Such anomalies can stem from distorted or missing input data, flawed algorithms, or unusual real-world events.

The results for Iceland and the Faroe Islands have not passed this review for the 2026 edition, primarily because we concluded that their fish consumption footprints must be severely distorted. This page explains what the current results show, what is driving the distortion, and what research is needed to address it.

Background

Students and faculty from the University of Iceland are collaborating with the Ecological Footprint Initiative at York University to update the National Footprint and Biocapacity Accounts. This partnership has deepened interest in mapping the footprint and biocapacity of Iceland, and also Faroe Islands, which have similarly fish-intensive economies. The collaboration has helped identify the issues described here, and work is now underway to address them.

Research Collaboration: Methodological Frontiers in Highly Specialized Marine Economies

Why Specialized Economies Matter for the Science

Certain national datasets serve as important stress tests for our global accounting methodologies. Iceland and the Faroe Islands are highly specialized, marine-driven economies whose production and trade volumes are enormous relative to their populations and relative to other sectors of their economies. Processing the latest data for these nations has revealed a methodological problem in the resulting Fishing Grounds Footprint.

Rather than withholding this data, the Footprint Data Foundation is highlighting it as a research priorities to be addressed in collaboration with our academic partners, particularly the lab of Dr. Brynhildur Davidsdottir at the University of Iceland, who also serves on FoDaFo's Science Advisory Committee. As her research on the Standard Ecological Footprint Method notes:

"The indicator seems in this respect not accurate enough yet to be able to deal with such a degree of specialization, especially where the main sectors are very large in relation to the population — at least not when the sector in question is the marine sector. The upside of this is

that highly specialized economies may in this way be very useful for identifying and correcting inaccuracies within the methodology for their sector of specialization."

A Statistical Impossibility: Apparent Consumption

The current Ecological Footprint of Consumption (EFc) results for Iceland's fishing grounds are highly incorrect. The data implies a per capita fish consumption that is physically impossible (it implies an amount of fish consumption per person higher than anyone could eat), and that conflicts with food supply data published by FAOstat.

Because the Fishing Grounds EFc dominates the national accounts for a marine-based economy, this distortion inflates Iceland's total Ecological Footprint of Consumption by a similar magnitude (for instance, for Iceland, the distorted fish footprint would be more than three times higher than the entire remaining footprint, which is highly unlikely).

Importantly, this is not a failure of Iceland's source data, which is of high quality. The problem appears to lie in how global accounting frameworks handle trade in marine by-products.

What Is Causing the Distortion

Three interlocking methodological challenges drive the problem:

1. Extreme Demographic Sensitivity

Iceland's harvest and trade volumes are massive for a country of roughly 390,000 people. This makes the accounting framework hypersensitive to small trade allocation errors. A misallocation of just 1% of the Production Footprint between imports and exports creates an artificial increase of approximately 0.4 global hectares per capita in the EFc. To put that in perspective: 0.4 gha is equivalent to the entire baseline Fishing Grounds Footprint of **South Korea**, itself one of the world's largest per capita fish consumers.

2. Missing Extraction Rates for Industrial Exports

The current methodology does not adequately account for the Live Weight Equivalents of secondary processed exports. Iceland is a global leader in producing fish meal and fish oils, largely from industrial reduction species and processing by-products, which are almost entirely exported. Because the accounting system does not properly credit the large reduction in weight these products represent, the "missing" mass defaults to the domestic consumption ledger, producing an artificially enormous footprint.

3. Trophic Blending in Trade

Species composition further distorts the results. Atlantic Cod makes up roughly half of Iceland's Fishing Grounds Ecological Footprint of Production and carries a high trophic level (currently assessed at 4.51). However, the methodology applies a blended average intensity, drawn from both domestic harvests and imports, uniformly to all exports. This means each tonne of high-trophic Cod exported is mathematically diluted by the lower-trophic industrial species (such as Blue Whiting) used for meal and oil. The result: the footprint value of exports is suppressed, and the apparent domestic footprint is inflated.

Transparency Through Collaboration

Methodological development is an ongoing, iterative process. Recent refinements to the global methodology improved accuracy for the vast majority of countries, but inadvertently amplified these structural vulnerabilities for major marine producers. But of course, other aspects need to be addressed and reviewed as well (Kitzes et al. 2009)

Publishing this data alongside its context reflects our commitment to transparency and our active research collaboration with the University of Iceland. We are using these findings to pursue targeted methodological improvements, so that the accounts can accurately represent highly specialized economies like Iceland and the Faroe Islands.

The key results for both countries are available at <https://fodfao.org/data>. In the worksheet, fish consumption figures, and any totals affected by them, are greyed out, to make clear to the reader that those numbers are unrealistic. All other figures appear in black and are considered reliable.

References:

Kitzes J, Galli A, Bagliani M, Barrett J, Dige G, Ede S, Erb K, Giljum S, Haberl H, Hails C, Jungwirth S, Lenzen M, Lewis K, Loh J, Marchettini N, Messinger H, Milne K, Moles R, Monfreda C, Moran D, Nakano K, Pyhälä A, Rees W, Simmons C, Wackernagel M, Wada Y, Walsh C, Wiedmann T., 2009. A Research Agenda for Improving National Ecological Footprint Accounts. *Ecological Economics*, 68(7), 1991-2007.

<https://www.sciencedirect.com/science/article/abs/pii/S092180090800298X>