VALUE FOR MONEY DIGEST

Reviving livelihood through market system development (MSD) in Yemen

APRIL 2026

Introduction

This document presents a Value for Money (VfM) analysis conducted for a transition to livelihood program intervention, integrating market systems development (MSD) approach in the fisheries sector of a fragile state context, covering the period July 2025 to March 2026, in Yemen.

The intervention aimed to strengthen the economic resilience and food security of vulnerable fishing communities by reducing post-harvest losses and enabling sustainable income generation within the fisheries value chain.

The programme builds on learning from an earlier pilot phase, applying an MSD approach to address systemic constraints rather than only direct support. Key focus areas included:

- Cold-chain bottlenecks — high spoilage rates and limited refrigeration access
- Weak access to finance for productive assets
- Limited maintenance and warranty models for solar-powered equipment
- Exclusion of women and youth from higher-value market roles

The programme operated at significantly larger scale than the prior pilot, reaching 1,794 fishing households and small traders across Aden & Hadramout governorates against only Aden in the pilot. Selected traders were supported to co-invest in solar cold chain equipment, with the programme covering 80% of the equipment cost.

Overview of the VfM Analysis

The VfM analysis used the 5Es (Economy, Efficiency, Effectiveness, Cost-Effectiveness[1],

1 Cost-effectiveness was not calculated due to lack of comparison data and the ability to calculate net effects. However, a contribution effect of the programme was calculated through a Benefit Cost Ratio

Equity) framework[2], adopting a mixed method approach. The Economy (cost per input and cost categorisation) and Cost-Efficiency (cost per output) components were analysed using Dioptra. — a web-based cost analysis software that helps programme teams calculate the full cost per output in a few hours, compare results to existing benchmarks, and review evidence-based strategies to improve reach and service delivery with limited resources.

The analysis used actual financial costs incurred between July 2025 and March 2026, considering direct, support, and indirect costs.

Limitations and assumptions of the analysis

- Attribution - No control group exists. All income gains are considered as contribution from the programme, since conflict, market conditions, and other factors also affect incomes in Yemen. For instance, some cold chain adoption may have occurred without the programme.
- Equipment Lifespan — Solar cold chain units are assumed to last 3–5 years.
    - An 80% annual retention rate is assumed in the base case, consistent with evidence from comparable deployments in fragile states with active servicing[3].
    - A conservative scenario also applies more pessimistic assumptions (70% retention, 12% discount rate, lower fish price and fishing days) to test the robustness of results.

Value for Money results

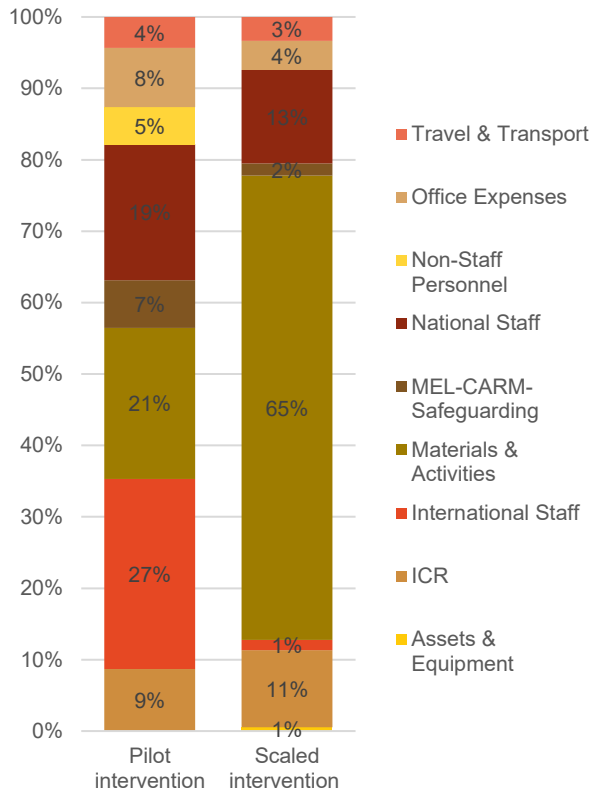
Economy

The analysis revealed that 80% of resources were direct programme costs (versus 54% in the prior pilot phase), while 11% went to support and 9% to indirect costs. This increase in direct programme spend reflects the benefit of an established structure, earlier assessment and research, and strategic reallocation toward subsidies — reaching 1,460 cold chain equipment recipients against a target of 1,000.

The key cost driver is Materials & Activities, accounting for 65% of total spend (against 21% at the pilot) — reflecting the capital-intensive nature of the smart subsidy component (53% of total programme cost) and start-up grants for women. Staff costs combined accounted for only 14% of total spend, compared to 35–40% in the prior pilot, demonstrating substantial economies of scale in delivery overhead.

International staff costs were minimal at just 1.4% of total spend, entirely in support functions — a sharp contrast with the prior pilot (25%). This shift to a nationally staffed operational model is a structural efficiency expected to persist in future interventions.

Figure 1: Cost categorisation



[2] https://www.mercycorps.org/sites/default/files/2025-10/value-for-money-guidance.pdf

[3] https://www.sciencedirect.com/science/article/pii/S2772940025000025

The programme experiences few challenges that influenced the timing delivery of equipment and start up grants. The main ones were:

- Installation and verification delays for smart subsidies;
    - Ramadan reduced working hours during a critical delivery window (shortening the observed usage period);
    - Limited number of qualified technicians available through vendors;
    - Higher-than-anticipated demand increased units to install and verify;
- Equipment diversion – 58 participants sold their cold chain equipment (4% of 1,460 recipients);
- Administrative barriers to financial inclusion: lengthy ID card renewal delayed bank account opening, particularly affecting women;

To overcome some of the challenges, the programme 1) set up delivery deadlines with vendors recovering delays caused by Ramadan and technician shortages; 2) encouraged cooperative/district governance meeting on diversion convened to reinforce accountability mechanisms and address the 4% diversion rate; 3) connected with banks to allow opening of temporary accounts facilitated using expired ID cards, enabling access to startup grants.

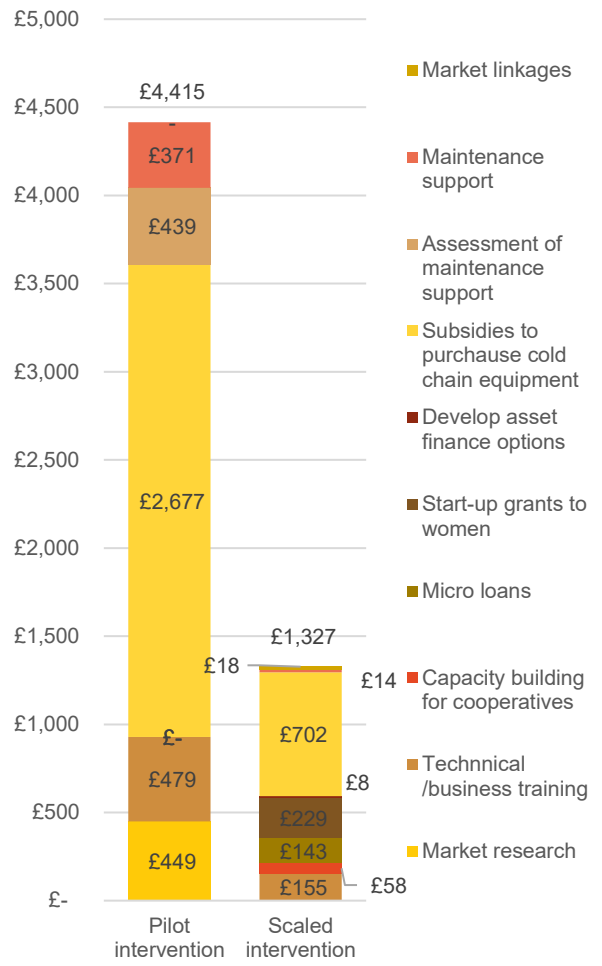
Efficiency and cost-efficiency

The scaled intervention reached 1,794 participants across five groups: fish processors, fishing households, sea-based product makers, maintenance service providers, and fish traders.

The average cost per participant reached (programme costs only) was £1,066, and the all-in cost per participant (including support and indirect costs) was £1,327. Subsidies to purchase cold chain equipment was the dominant cost component at £702 (53%).

Compared to pilot, where the cost per participant was £4,415, the scale intervention demonstrates significant economies of scale reaching 51 times more participants at approximately one-third the per-person cost of the pilot.

Figure 2: cost per trader reached by pilot and scaled intervention models



Once equipment was received, retention level was very high (94%), indicating strong value proposition and appropriate intervention design. This was further supported by the high commitment of participants to cover the remaining 20% to acquire cold solar storage units, which was perceived as a long-term investment.

Effectiveness and outcome change

The scaled intervention measures effectiveness through two economic measures: household income change (measured across all 1,794 beneficiary households) and post-harvest loss reduction through cold chain adoption (measured across cold chain recipients).

The median monthly household income increased by 83% (60,000 → 110,000 YER). A 50,000 YER

monthly gain equates to only £23.36[4]/month (£280/year) per household, for a total income benefit of £502,851/year across all 1,794 households. This highlights a fundamental feature of the scaled model: the income source alone cannot cover the programme cost within any reasonable time horizon — cumulative income benefits over 10 years total approximately £5.0 million at a 10% discount rate, representing 2.1x the programme cost. The real economic benefit of the programme seems to be therefore driven primarily by the savings achieved by preventing spoilage source.

The savings achieved by preventing spoilage are measured through post-harvest fish loss, translated then into a monetized economic benefit. Overall, traders were able to save from spoilage benefits on average £20 daily - equivalent to 10-20 days' income saved every single day. The prevention in fish spoilage generated a Year 1 total benefit of £6,873,594 (base case), dwarfing the income benefit of £502,851. This figure rests on the assumption that 1,009 participants, 70% of all cold chain equipment recipients i.e. non humanitarian assistance participants, experienced an average of 6.93 kg/day spoilage reduction.

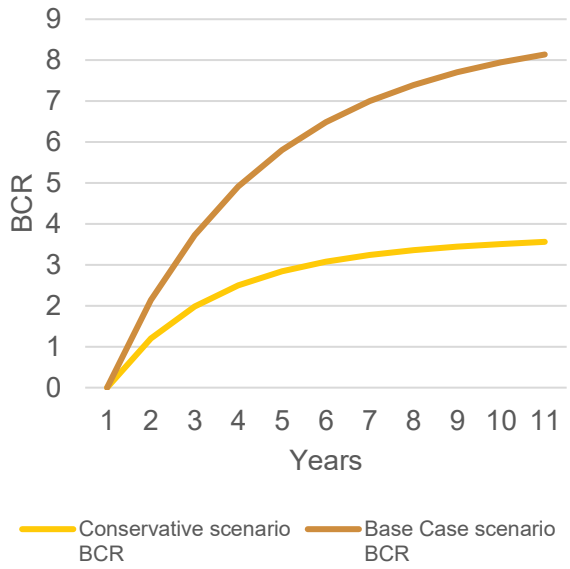
The economic model was built using two scenarios, the base and a conversative case (table 1).

Table 1: Benefit Cost Ratio scenarios

Parameters	Conservative	Base case
Retention Rate (%/yr)	70%	80%
Discount Rate (%/yr)	12%	10%
Income Decay Rate (%/yr)	97%	100%
Fishing Days per Year	250	312
Fish Price (YER/kg)	5,000	6,250
Monthly Income Gain (YER)	35,000	50,000

In the base case scenario, the scaled intervention Benefit Cost Ratio (BCR) is exceptionally strong in Year 1 (2.14x), reflecting the large upfront spoilage benefit of £5.1 million in Year 1 alone. The programme recovers its cost almost two times over in the first year of operation, driven by the scale of cold chain adoption (1,009 recipients[5]) and the magnitude of spoilage reduction (6.93 kg/day per recipient valued at £6,313/year per recipient). By Year 10, cumulative discounted benefits reach £16.9 million against a programme cost of £2.4 million, a 8.1x return.

Figure 3: Benefit Cost Ratio (BCR)[6][7]



[4] 2,141 YER/GBP

[5] Assuming 70% (1,794*70%) of cold chain equipment recipients, not being also recipients of humanitarian assistance, were able to immediately avoid fish spoilage

[6] Case base scenario with 80% retention of spoilage benefit and 10% discount ratio no income decay and conservative scenario with 70% retention of spoilage benefit, 12% discount rate and 3% income delay. Both scenarios are based on 1,794 participants improving income and 1,401 participants reducing fish spoilage due to the use of cold chain equipment (4% diversion adjustment)

[7] https://yemen.yeti.acaps.org/xr-commodities/

The preventing in fish spoilage benefit declines in absolute terms each year as retention erodes (80% or 70% of previous year's benefit), but this is partially offset by the stable income benefit of £502,851/year. By Year 10, the preventing in fish spoilage benefit has fallen to £ 684,053 /year (from £5.1 million in Year 1), reflecting the cumulative effect of 10 years of 80% retention.

For every £1 invested, the intervention generates a return between £3.6 and £8.1 within 10 years

A conservative scenario applies more pessimistic assumptions to test robustness, with 70% retention (vs 80% base), 12% discount (vs 10%), 5,000 YER/kg fish price (vs 6,250), 250 fishing days (vs 312), and 35,000 YER/month income gain (vs 50,000):

In the conservative scenario, the intervention BCR is positive and substantial under all tested scenarios from Year 1 onwards. Even the conservative model returns £3.6 for every £1 invested at Year 10, and £1.2 in Year 1. The spread between conservative and base case (3.6x at Year 10) reflects the sensitivity of the model to fish price and fishing days assumptions, which together determine the total spoilage value.

Equity and Inclusion

The scaled intervention expanded the equity dimension substantially. The programme reached 349 women with fish processing training and start-up grants (19% of the total), and 84 youth were trained as maintenance service providers with basic tool kits. These two groups represent explicit inclusion objectives. The programme's response to ID card access barriers, facilitating temporary bank accounts for women from humanitarian assistance backgrounds using expired documentation, demonstrates a practical equity orientation in implementation.

However, women's governance representation in cooperatives remained at only 2.9% of leadership positions, and 25% of women reported never participating in cooperative meetings. This gap between enrolment equity and governance equity is the key equity challenge for future intervention design.

Inclusion consideration can also be made in relation to resources used. The intervention operated with solar panels rather than relying on the more expensive electricity grid or generators.

Recommendations and observations

The scaled intervention represents a transformational leap in scale, intervention design, and value for money relative to the pilot. The scaled intervention outperforms the pilot with a cost per person reached of £4,415 to £1,327 in the scaled intervention — a 70% reduction.

The BCR analysis confirms strongly positive returns in the scaled intervention from Year 1 under the base case scenario (£2.1 returned per £1 invested in Year 1, rising to £8.1 by Year 10), driven by large-scale reductions in post-harvest fish spoilage.

In future interventions,

- investments in maintenance should be increased to ensure high retention of cold chain equipment. For instance, a difference between 55% and 80% retention over 10 years is approximately 7.7 BCR points. The programme should be able to track post-distribution equipment check, after 6 months and 12 months.
- participants should be disaggregated by types in BCR modelling, segmenting cold chain benefits by participants type (fishers vs processors vs traders) from the outset, with activity-level cost allocation to each type. This would allow to avoid programme-wide averages that blend very different groups impact
- cooperative credit outreach should be strengthened. Only 4.8% of scaled intervention endline respondents accessed credit in the past year despite 94% cooperative membership and 33 cooperatives supported via revolving loans fund. A diagnostic of lending uptake barriers might help informing a revised revolving loan fund component.

About Mercy Corps
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