

COST-BENEFIT ANALYSIS OF USING REUSABLE AND RECYCLABLE BOXES FOR THE TRANSPORT OF FISH

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BACKGROUND



Polystyrene foam (EPS) is extensively used in the fishing sector



Key components of marine litter at sea and beached along coasts



Threat to marine life and potentially dangerous for humans, through microplastics



Switch to reusable polypropylene boxes is promising in environmental terms

RESEARCH QUESTION



Can economic benefits drive the shift from polystyrene to polypropylene boxes while cutting down the environmental footprint of fish transport?



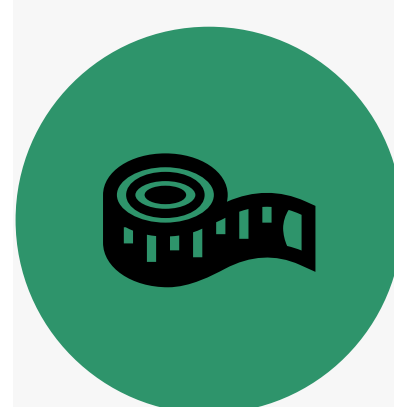
METHODS



Cost benefit-analysis simulated for multiple scenarios



The simulation model predicts trends in socio-economic variables and key profitability indicators.



Adapted from STECF (AER), BEMTOOL and MEPHISTO approaches.



Fleet-segments based simulations

TAKE HOME MESSAGE

Economic Benefits

- Decrease of operational costs in the long-run
- The adoption of sustainable practices can lead to an increase in fish prices, as consumers are willing to pay more for sustainable products.

Environmental Benefits

- Gradual elimination of disposable boxes with reusable and recyclable ones (avoiding the release of microplastics).

Time for the system to be fully implemented

- The system requires time to come into full operation: need to implement a closed loop process for the boxes to come back to the "base" after use.
- The "base" will be determined by commercial decisions and existing practices (at local level)
- It is, hence, crucial to identify dedicated centers (the "bases") that handle logistics, including purchasing, washing, recovery, and transferring eco-boxes to producers and buyers/intermediaries.

Key role of POs

- Aggregating supply and services becomes crucial to gain efficiency, in a context of generalised crisis for the sector
- Producers Organisations can centralize logistical operations, achieving economies of scale

Opportunities from funding sources

- Availability of funding opportunities through EMFAF to fund projects aimed at reducing the environmental foot-print of the fishing sector.

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RESULTS

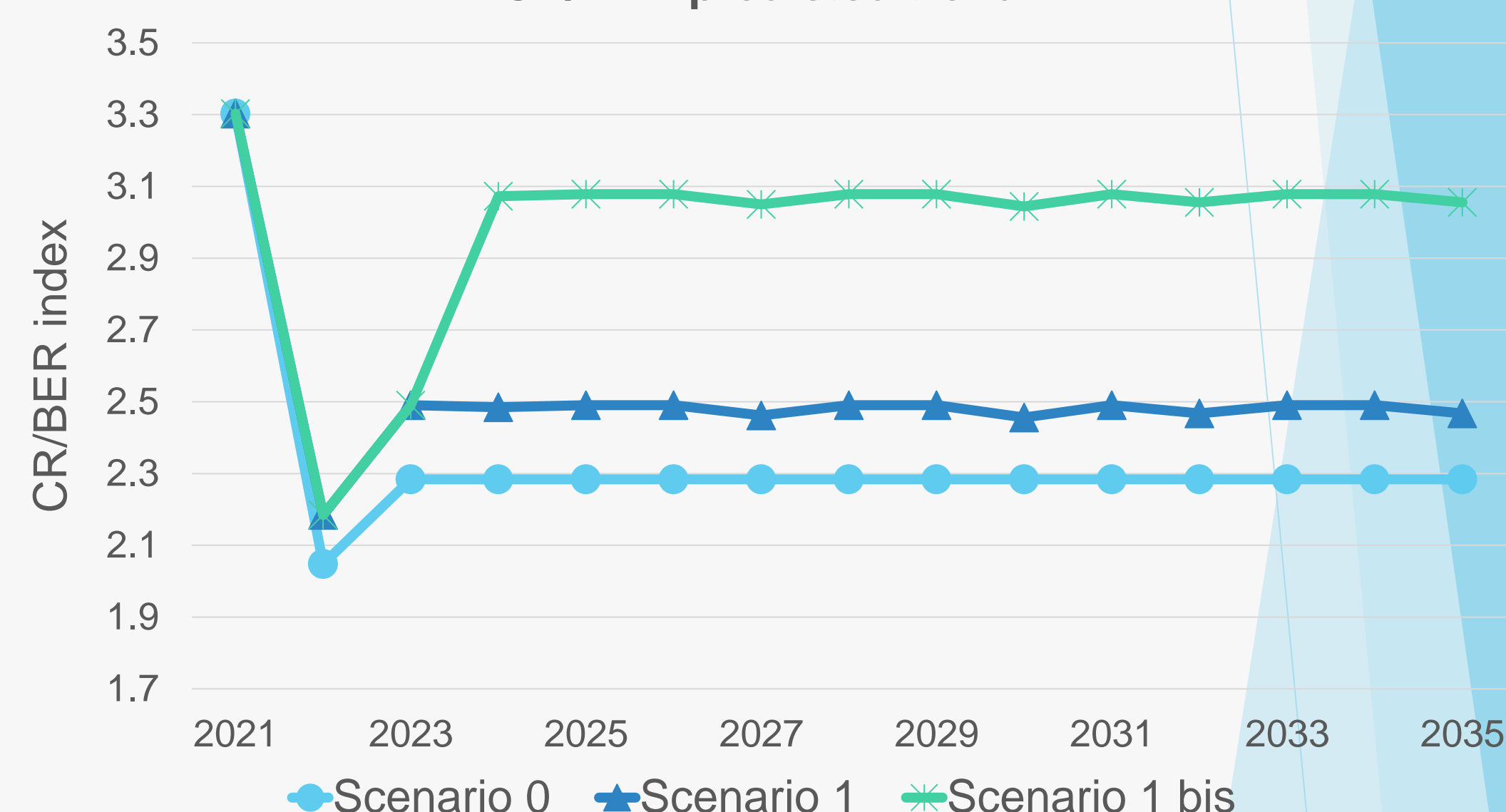
CASE STUDY

Italian Beam trawlers fleet (vessels >18 metres LoA)
 Adriatic Sea (FAO Geographical Sub Areas 17&18)

- || **Scenario 0:** Status quo
- || **Scenario 1:** replacement of boxes + purchase of washing machine at vessel's level (=higher costs year 1 for initial investments and decrease of operational costs in the long run)
- || **Scenario 1 bis:** Scenario 1+ premium price/sustainability labelling (= Scenario 1 revenues/costs+ higher incomes for expected higher prices in the long run)

Note: the volume of landings and operational costs other than boxes costs, have been assumed to be constant in all the scenarios

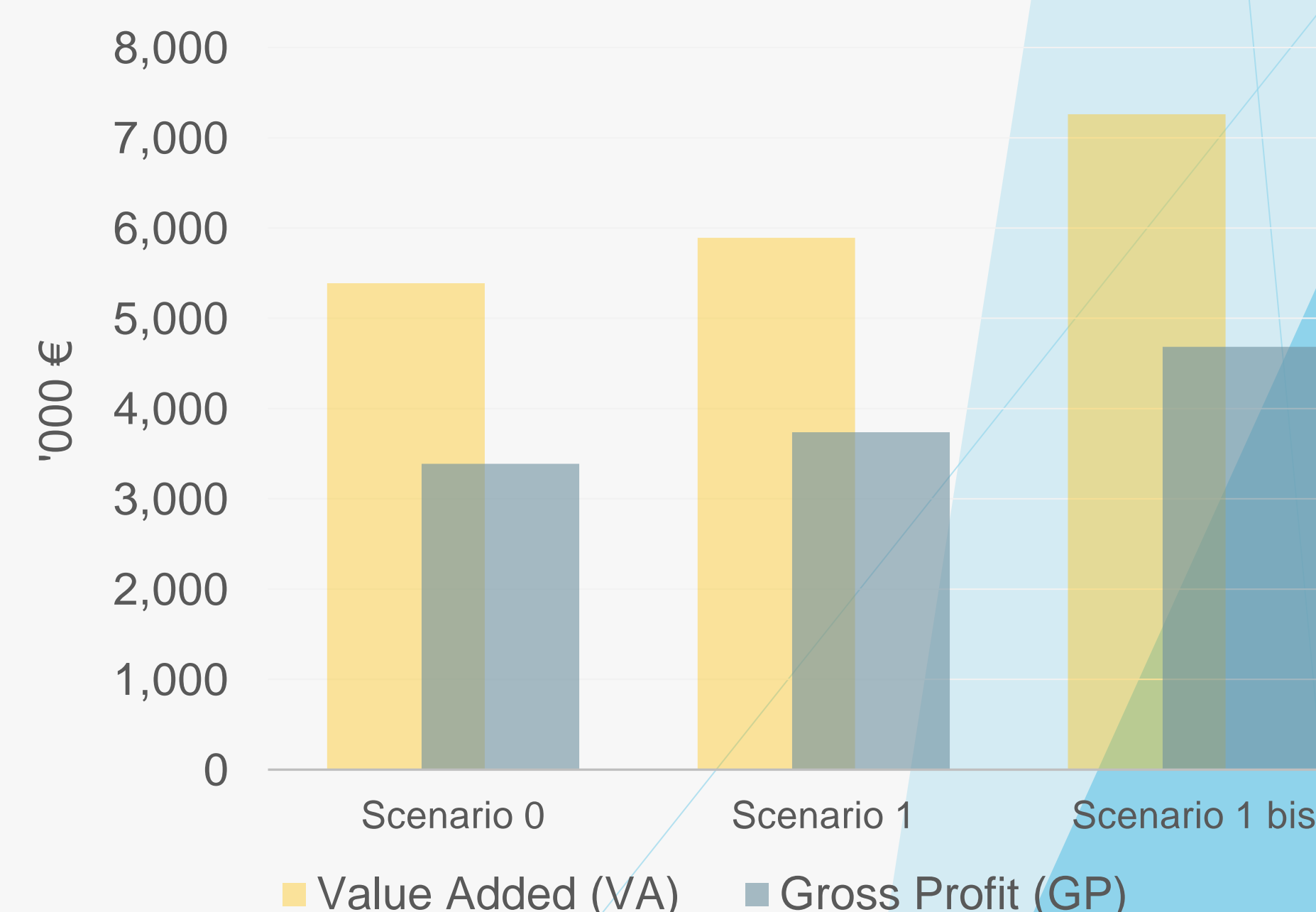
CR/BER predicted trend



Source: NISEA elaboration on data a) from MASAF and b) collected on the field
 Note: CR/BER<0.9= economic inefficiency; 0.9<CR/BER<1= low economic efficiency; CR/BER>1 high economic efficiency

Profitability analysis: the ratio between current revenue and break-even revenue (CR/BER) calculated for Scenario 1 and 1-bis is higher than that calculated for status quo level (=Scenario 0)

Discounted value of VA and GP at 2035



Source: NISEA elaboration on data a) from MASAF and b) collected on the field.

Cost benefit Analysis: the discounted value of Value Added and Gross Profit projected to 2035 for Scenario 1 and 1-bis are higher than those calculated for the status quo level (=Scenario 0)