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Innovative modified nets in the *Nephrops* fishery

The dual cod-end and coverless trawl

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A trusted source of objective advice and support for the future of sustainable, profitable fisheries.

Wider PhD research in sustainable *Nephrops* fisheries:

1. Regional review of *Nephrops* fisheries (including technical measures)
2. Gear trials – modified trawl nets
3. Condition of creel- versus trawl-caught *Nephrops*
4. Socioeconomic and sustainability impacts of creel versus trawl fisheries targeting *Nephrops*

Nephrops fisheries in the UK

A mixed fishery of high economic importance

- Other commercially important species:

  e.g., Cod, Haddock, Whiting, Plaice, Sole

- "Choke species"

North Sea	Both	Irish Sea
▪ Witch	▪ Sole	▪ Whiting
▪ Turbot	▪ Cod	
▪ Plaice		

(ICES, 2023)

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(ICES, 2023)

Nephrops exports:

- 22,600 tonnes in 2022 (5th highest)
- £125 million value (2nd highest)
- To: France, Italy, Spain

(Seafish, 2022)

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(Seafish, 2022)

- Bycatch: undersized whitefish and juvenile *Nephrops*
- Desire to improve sustainability

Gear Trials Partnership Project (GTPP)

DEFRA Fisheries Industry Science Partnership (FISP) funded

Part A

Aim: Develop a research proposal for a rigorous, selective fishing gear trial to reduce bycatch in *Nephrops* trawl fisheries – building on past industry efforts.

Landscape review

- 44 trials reviewed

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Co-design

- With UK *Nephrops* skippers

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Industry feedback

- Presentation deck

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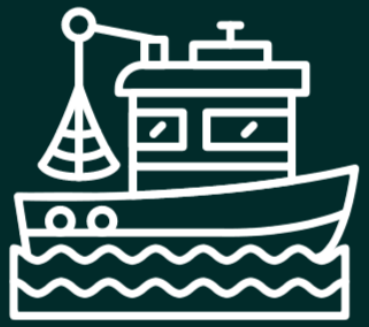
Part B

Aim: To robustly trial and make final conclusions on the performance of the two most promising *Nephrops* fishery gear modifications – the dual cod-end and coverless trawl.



Robust testing
of modified gears

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Robust testing of modified gears

Ecological & socioeconomic considerations

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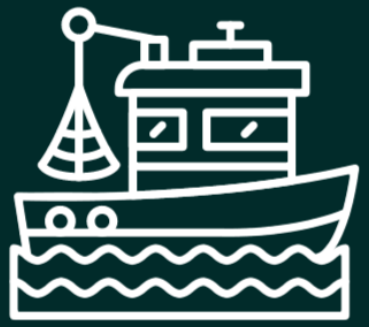

Robust testing of modified gears

Ecological & socioeconomic considerations

Policy & management change

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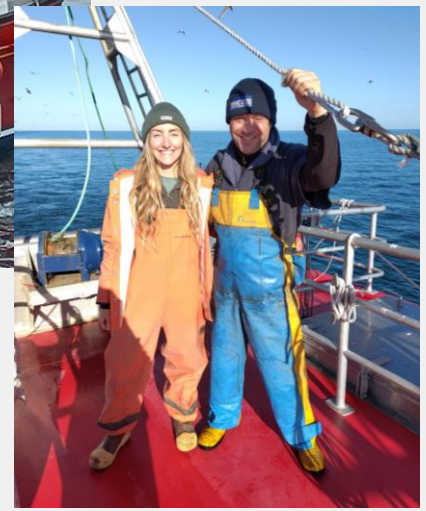
Part B

defra
Department for Environment Food and Rural Affairs

Golden Ray B963 (Irish Sea)
Twin-rig, 15 metres

Lily James SN36 (North Sea)
Single-rig, 14 metres



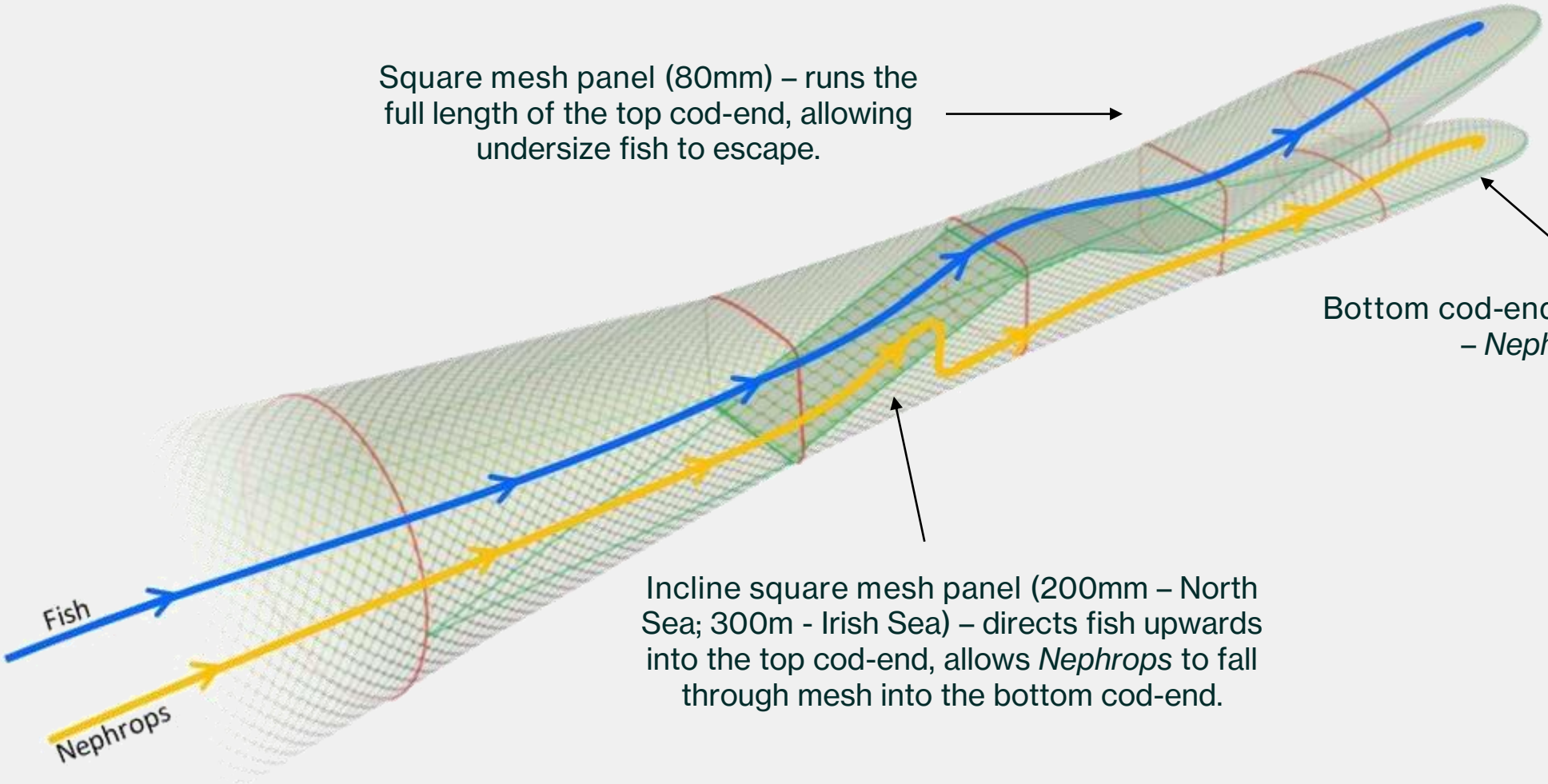
Northern Ireland Gear Trials Project & afbi AGRI-FOOD & BIOSCIENCES INSTITUTE

Dual cod-end

Separate *Nephrops* from fish bycatch, improve quality and reduce sorting time, reduce juvenile bycatch.

Top cod-end (99mm diamond mesh) – commercial-sized fish retained.

Square mesh panel (80mm) – runs the full length of the top cod-end, allowing undersize fish to escape.

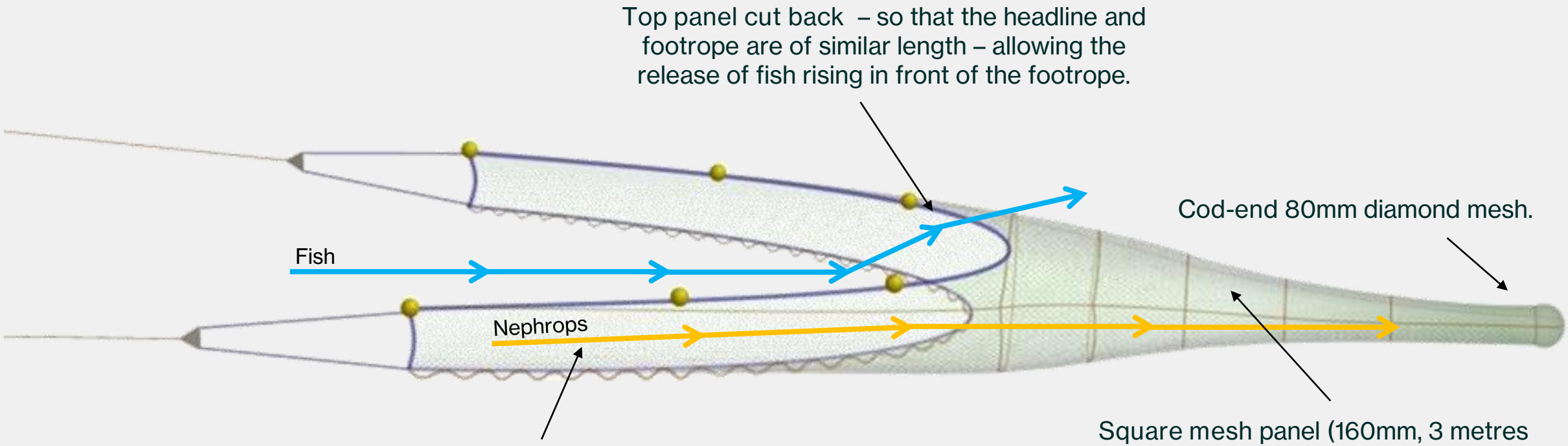


Bottom cod-end (90mm diamond mesh) – *Nephrops* retained.

Incline square mesh panel (200mm – North Sea; 300m - Irish Sea) – directs fish upwards into the top cod-end, allows *Nephrops* to fall through mesh into the bottom cod-end.

Coverless trawl

Reduce fish (primarily whiting and haddock) bycatch and improve fuel efficiency.



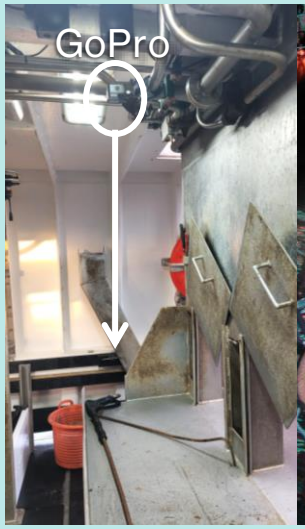
Data collection

Ecological

1. Catch
2. Condition
3. Environment

Observers

Cameras



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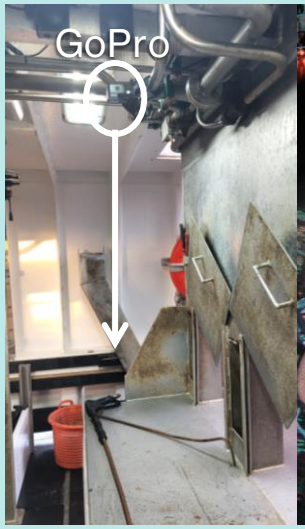

Socioeconomic

Expected results

1. Reduced bycatch and increased selectivity in both the dual cod-end and coverless trawl compared to the standard trawling gear.

- Variations in performance between gears, trial locations, and seasons
  - Dual cod-end – effective separation between *Nephrops* and commercial-sized fish
  - Coverless trawl – further reduced whitefish catch

Expected results

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    - Variations in performance between gears, trial locations, and seasons
        - Dual cod-end – effective separation between *Nephrops* and commercial-sized fish
        - Coverless trawl – further reduced whitefish catch

2. Reduced cod-end bulk / increased separation in the modified nets will result in better catch quality.

    - Potentially increasing both:
        - Market value (economic)
        - Survivability of discards (ecological)

Sorting table images

Standard trawl

Sorting table images

Dual cod-end

Standard trawl

Sorting table images

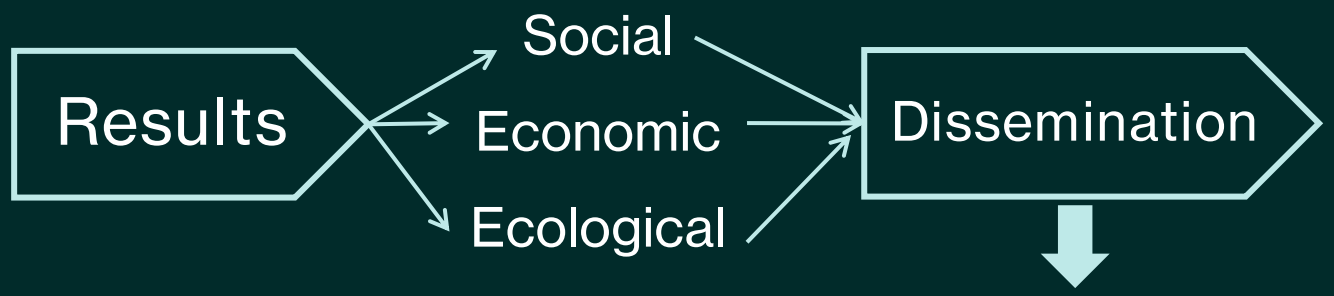
Dual cod-end

Standard trawl

Coverless trawl

Dissemination & implementation

DEFRA Fisheries Industry Science Partnership (FISP) funded



- Gear animations
- Short documentary
- Infographics
- News reports
- Policy briefs

...and more!

Dissemination & implementation

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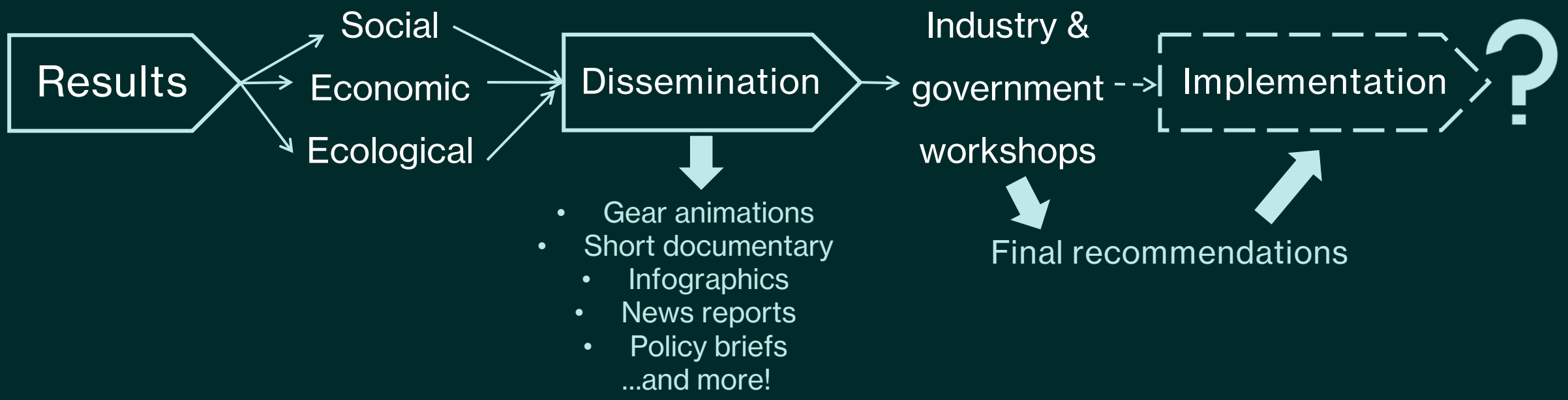

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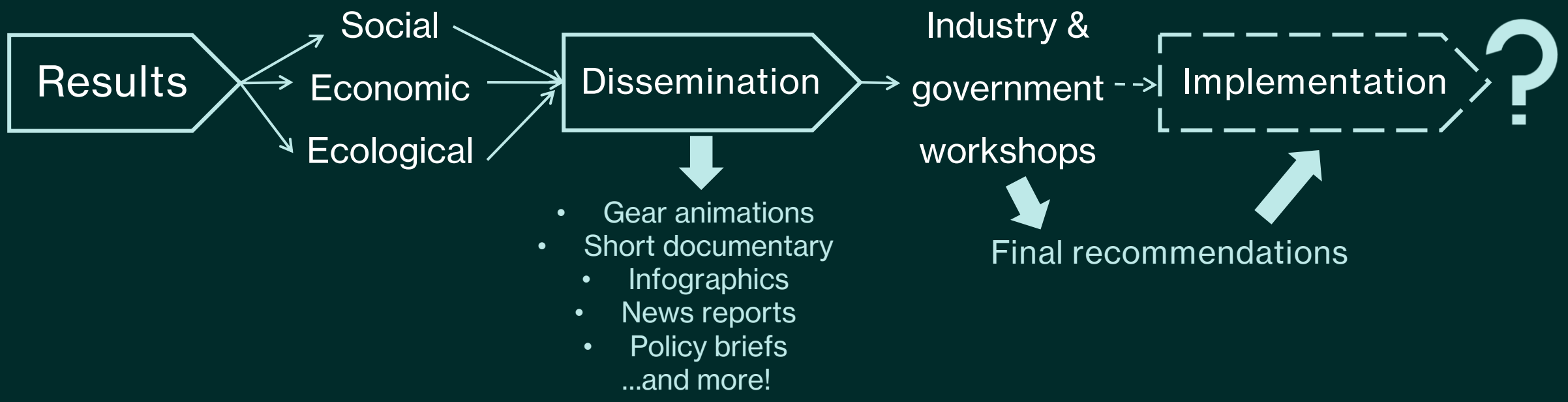

Industry-driven (bottom-up), scientifically-backed, management changes

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Feedback & Questions

Contact:

lois@marfisheco.com

www.marfisheco.com

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