



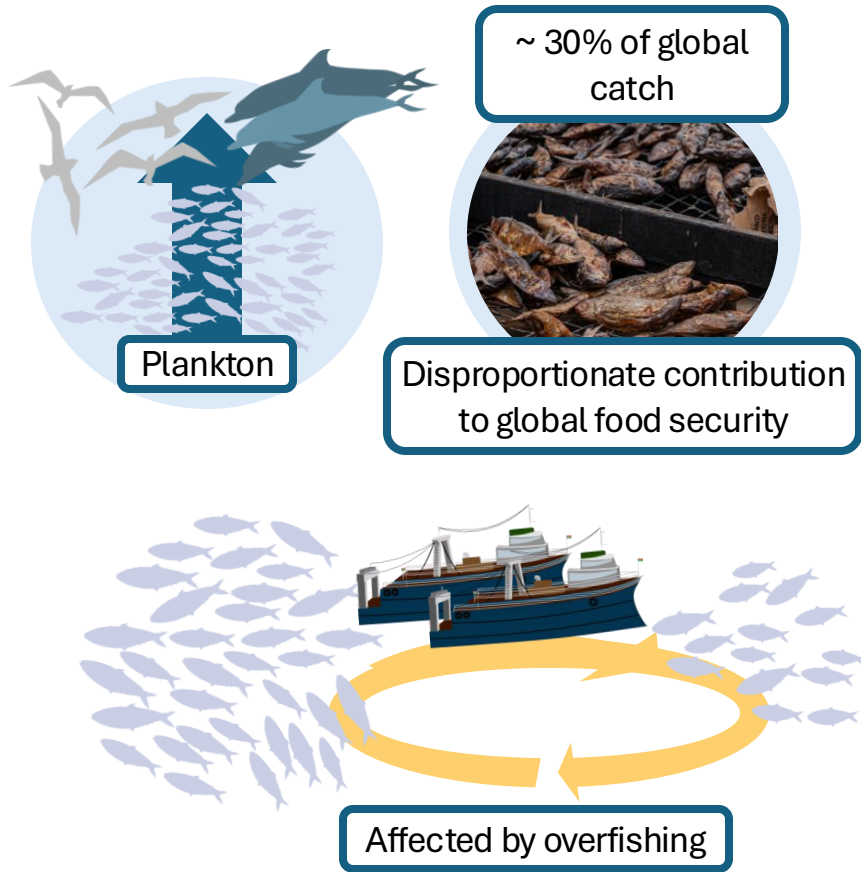
Distal drivers of fishing pressure in global small pelagic fisheries: a systematic review

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James Robinson



Small pelagic fish

Important but overfished



Given the **importance of SPF**, need to understand the **drivers of overfishing**

Wild capture fisheries are **socially complex**

Fish and fish products are the **most traded** food commodity

Fishery sectors **compete** for the same resources

Spatial mismatch between fisheries and management

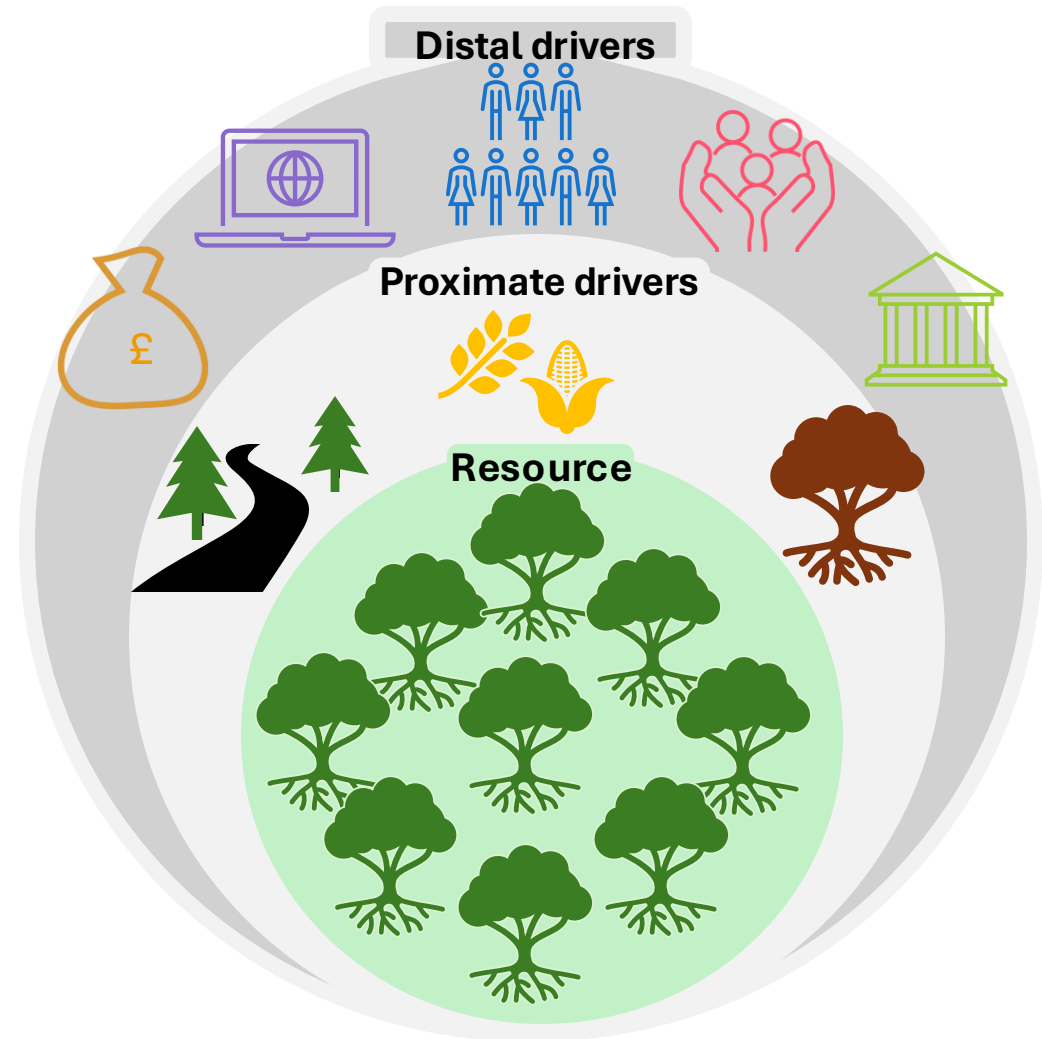
Challenging to isolate individual drivers

Proximate and distal drivers framing

Social drivers of tropical deforestation

Proximate drivers: human activities or immediate actions at the local level.

Distal drivers: Social processes which, through their influence on the proximate driver, affect the focal resource system.

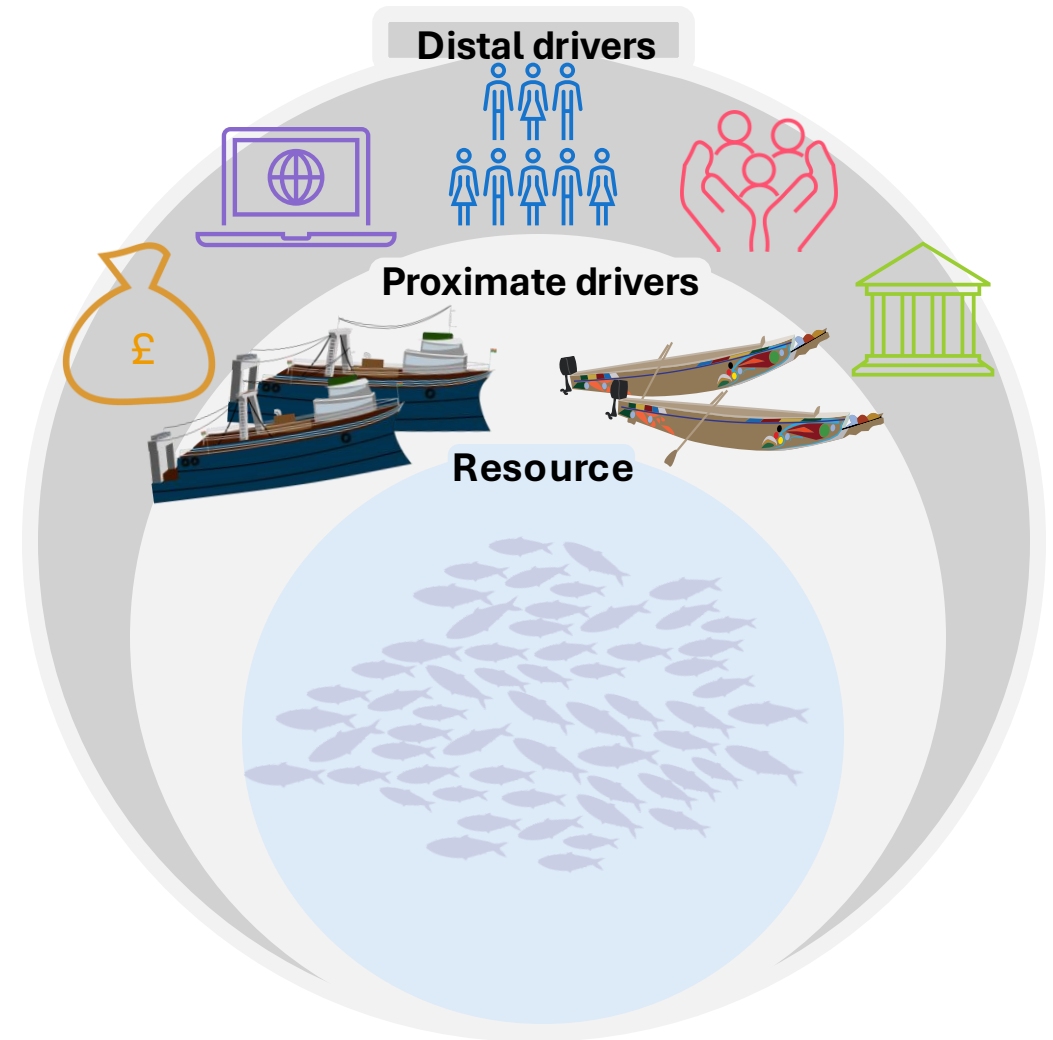


Proximate and distal drivers framing

Fisheries management or research focused on proximate drivers

Less focus is placed on distal drivers which may limit the effectiveness of management

Adapt this framework to show, clearly, how different distal drivers affect fishing pressure in small pelagic fisheries



Study aims

Distal drivers of fishing pressure in small pelagic fisheries



Review available **literature** to
synthesise knowledge on distal drivers

Identify key driver combinations
influencing fishing pressure

Identify gaps for future
research

Methods

Systematic review – PRISMA guidelines

1) Criteria for paper inclusion

- One or more small pelagic fishery
- Effect of one or more distal driver on fishing pressure proxy
- Exclude review papers

2) Search strings

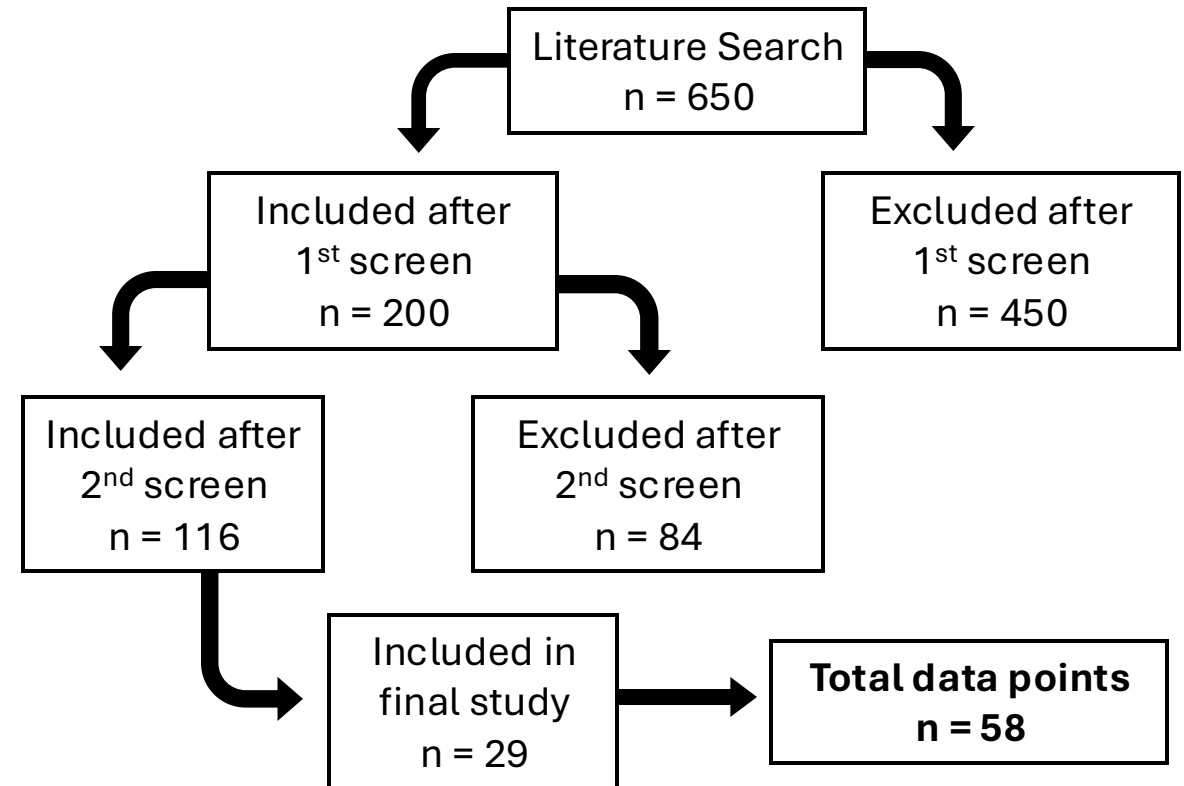
- Developed 3 search strings
 - Small pelagics, fishing pressure, distal drivers
- Iterative process

3) Screening process

- Web of Science core collection
- 3 stages of screening
 - Titles and abstracts, full text, full text and data collation

4) Data collation

- Fishery characteristics
- Drivers, direction and effect



Papers versus cases

If a paper **described more than one fishery, or proxy for fishing pressure**, each was included as a **separate case**

Methods

Process of driver categorisation

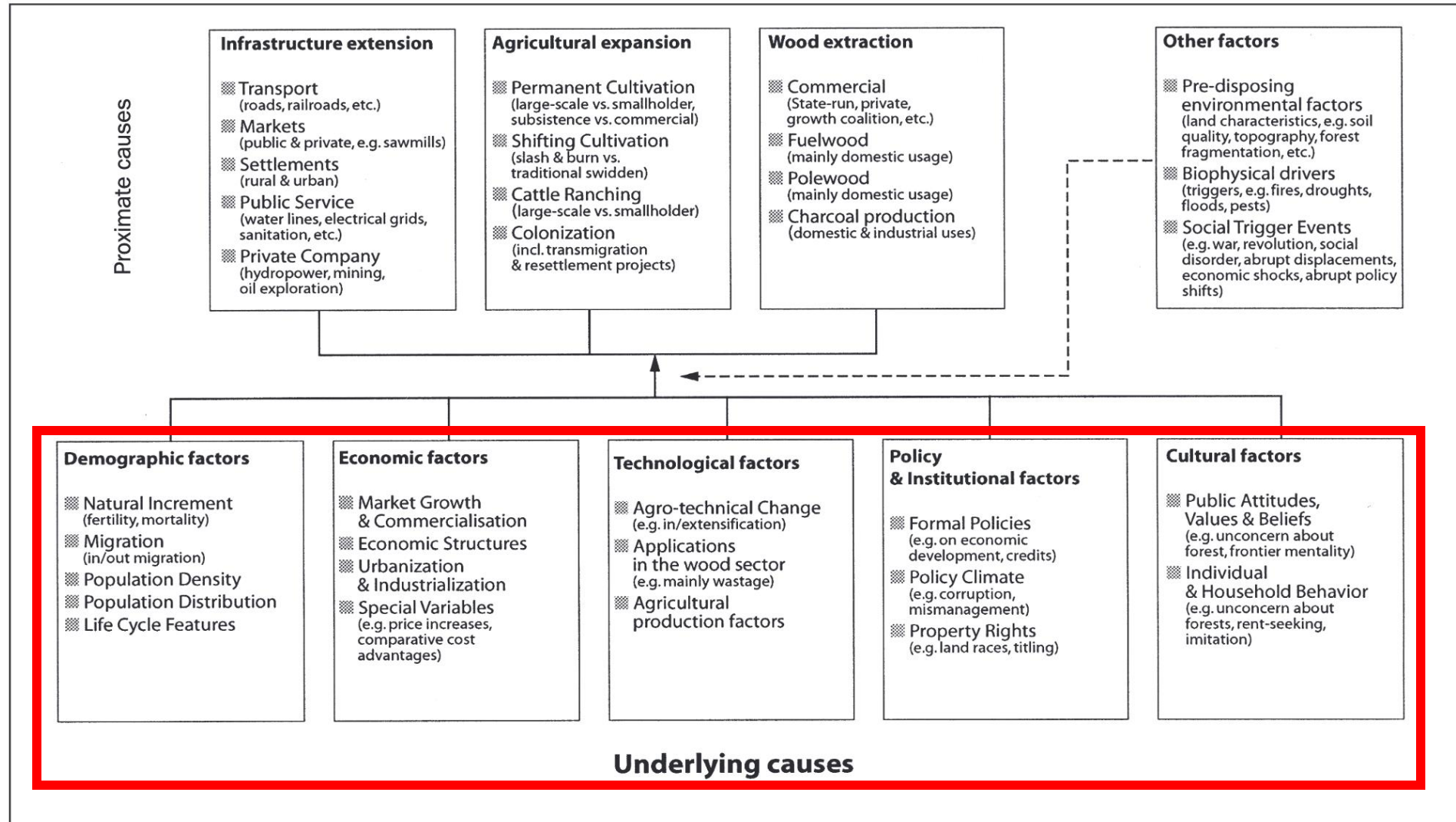


Figure 1. Causes of forest decline. Five broad clusters of underlying driving forces (or fundamental social processes) underpin the proximate causes of tropical deforestation, which are immediate human actions directly impacting forest cover.

Methods

Process of driver categorisation



Broad categories from Geist and Lambin 2001

Iteratively built subcategories

- Based on literature
- As more drivers identified, developed new categories

2 levels of categorisation

- Data format allowed analysis at different levels of driver resolution

Broad categories

Demographic

Policy and Governance

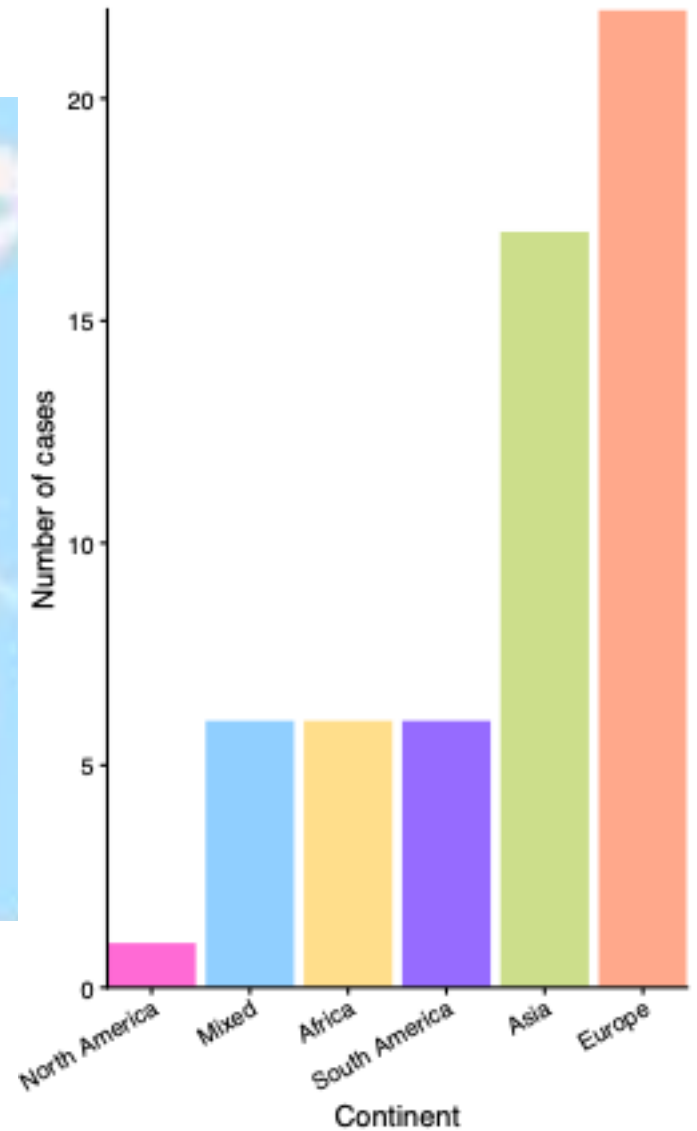
Economic

Cultural

Technological

Results

Where is research focused?



Most cases focus on **European** fisheries
(37.9% of cases)

Most cases focusing on Asia
came from **Bangladesh**
(47% of cases from Asia)

Results

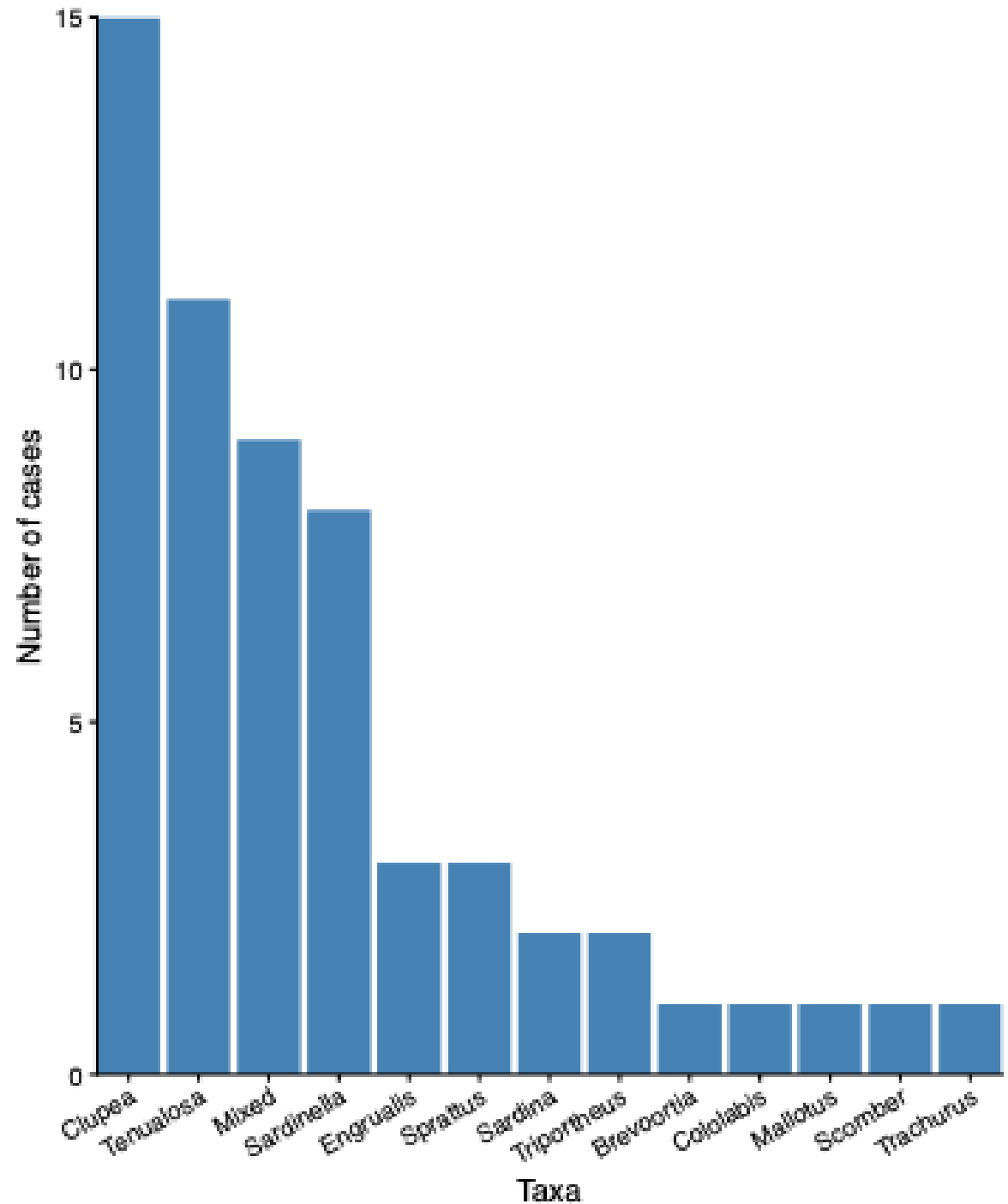
What taxa is research focused on?

Most cases
focused on:

Clupea (25.9% of
cases)

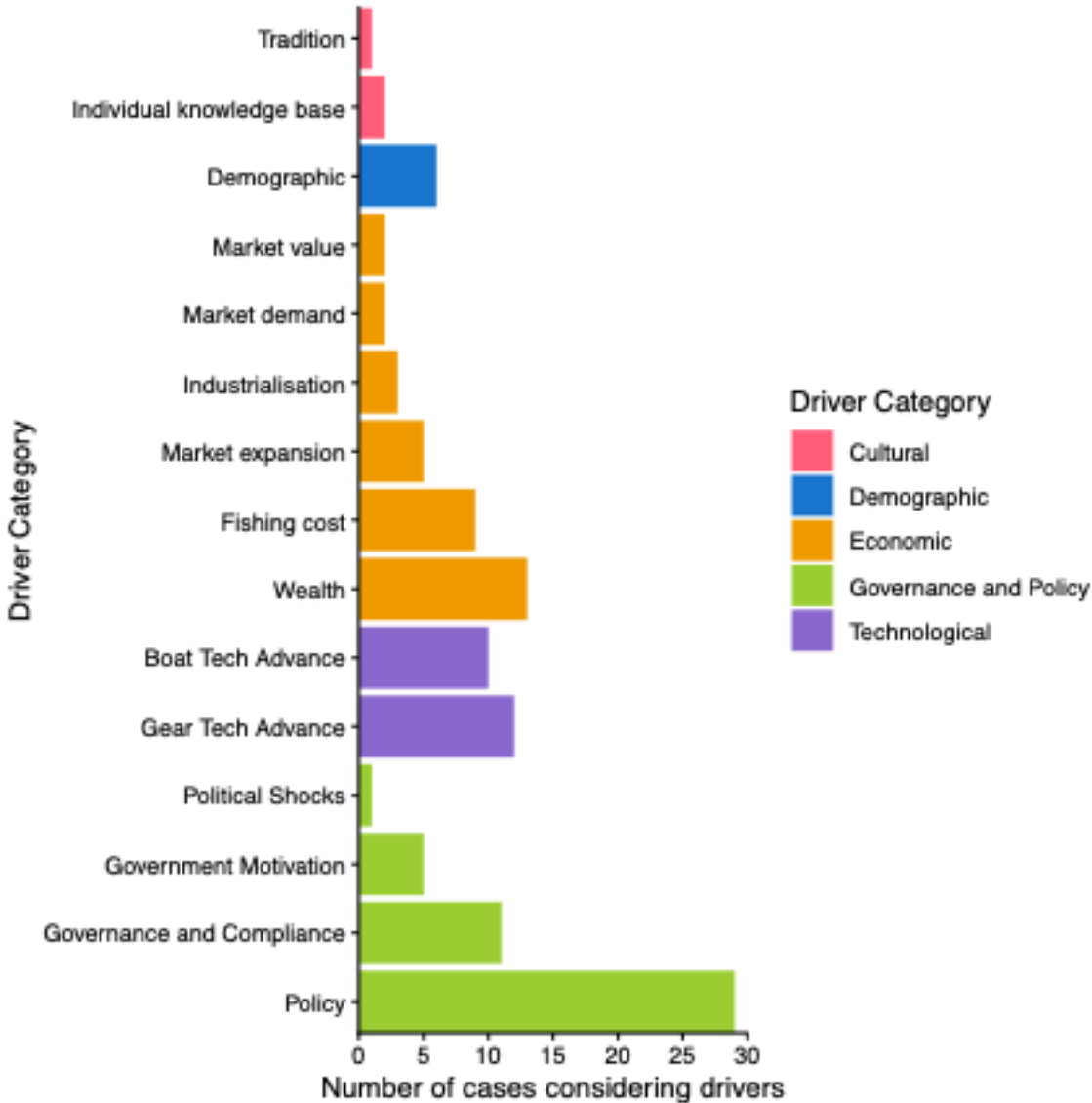
Tenualosa
(19.0% of cases)

Mixed fisheries
(15.5% of cases)



Results

What drivers are identified most often?...



At **broad scale**:

- Governance and Policy (79.3% of cases)
- Economic (58.6% of cases)

At **fine scale**:

- Policy (50.0% of cases)
- Wealth (22.4% of cases)
- Gear tech (20.7% of cases)

Mixed and N. America:

Economic drivers

Europe and Asia:

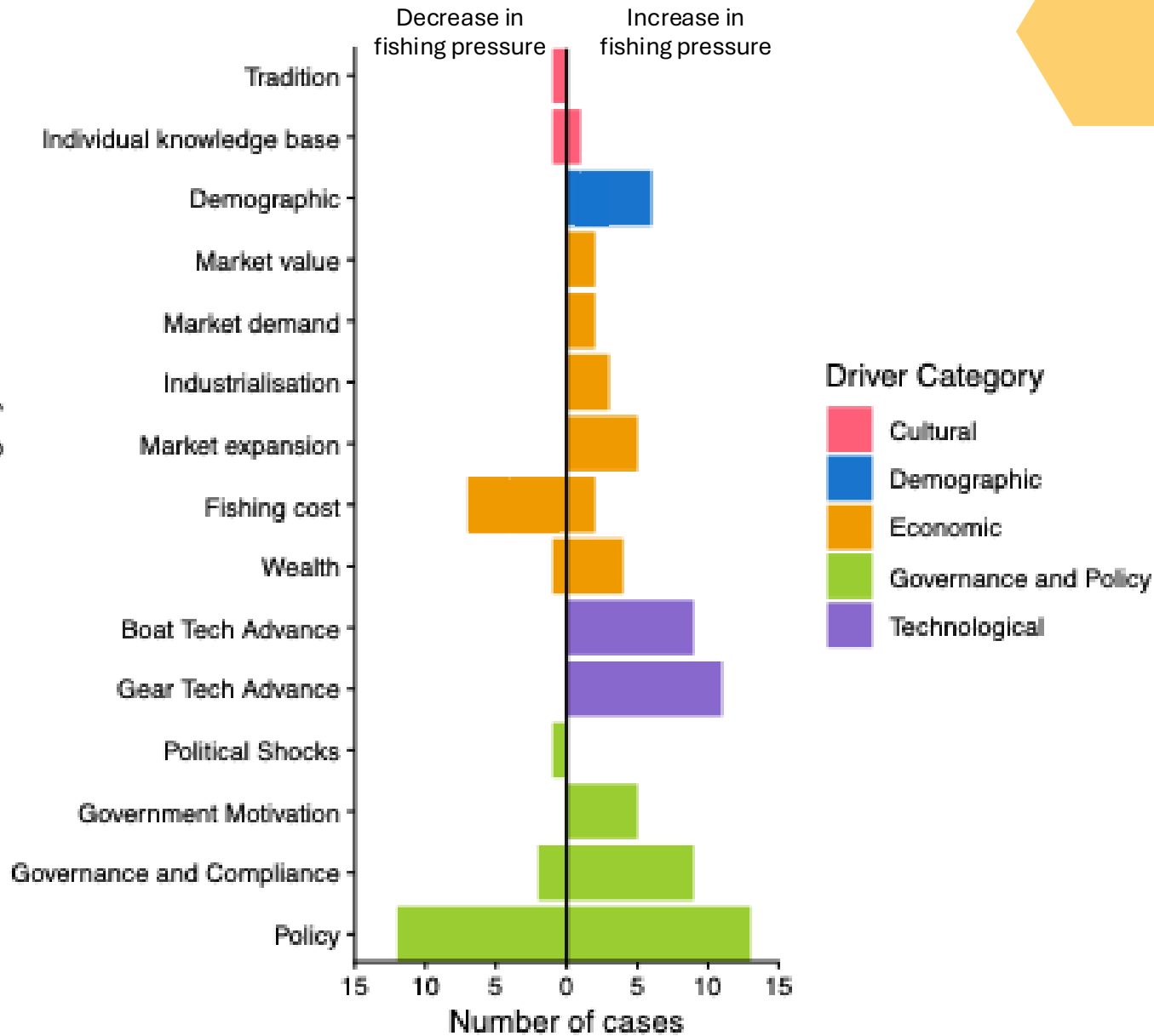
All five broad drivers

Africa and S. America:

Economic, Governance and policy drivers and Tech drivers

Results

... and what is their effect?



Directional drivers standardised for driver direction

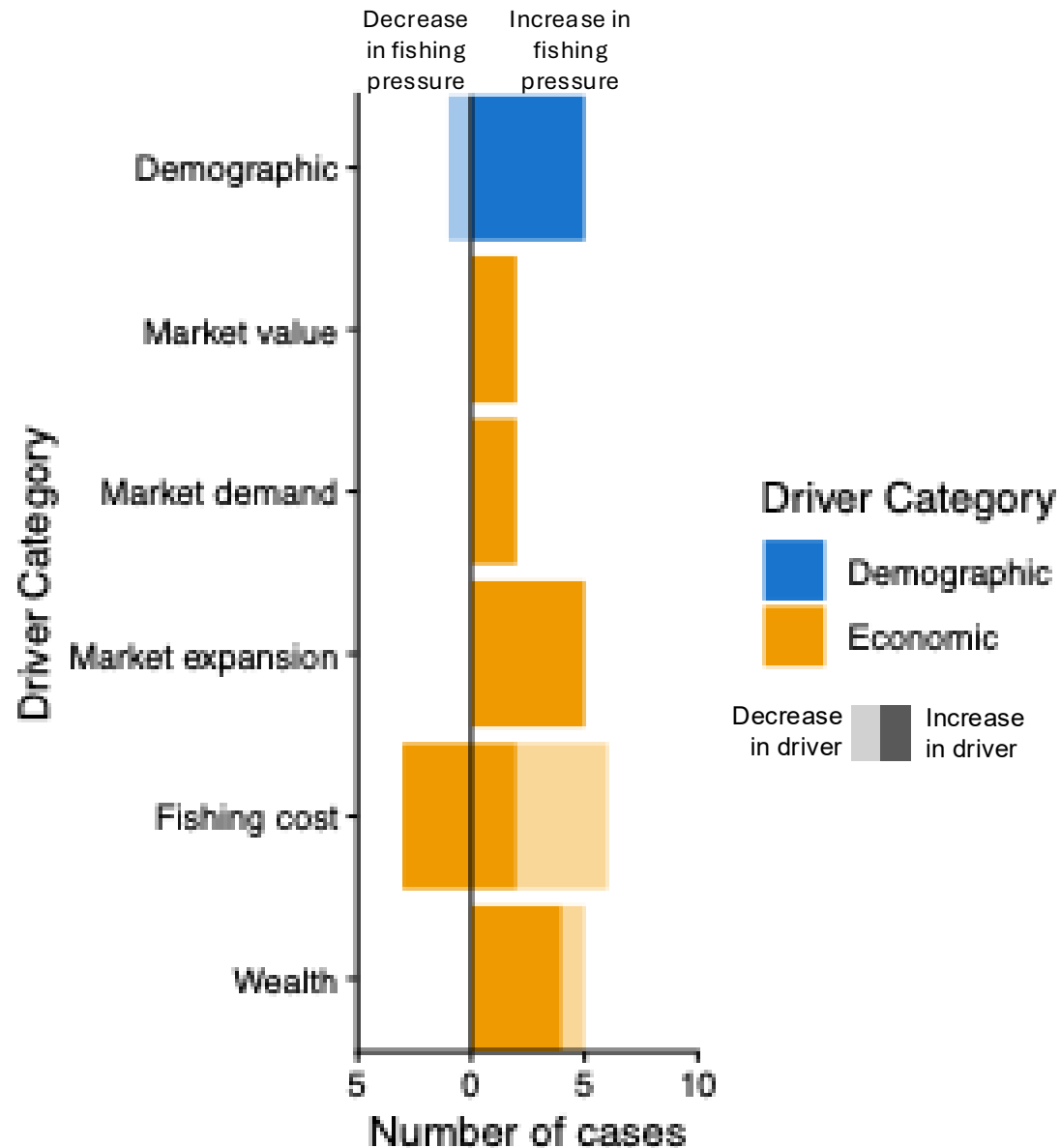
'if driver always increased, what would the effect be?'

Some drivers **always increase** fishing pressure

Policy and fishing cost most often found to **reduce** fishing pressure

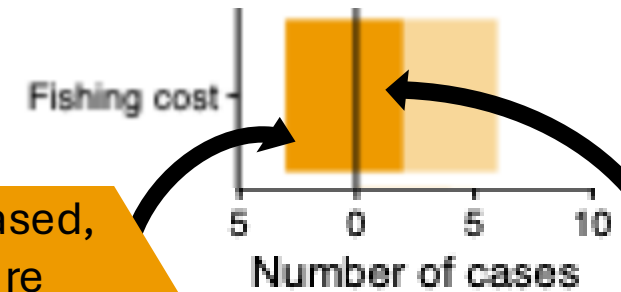
Results

... But what is *actually* happening?



“What driver change was observed and how did it affect fishing pressure?”

Fishing cost increase does not always lead to a decrease in fishing pressure



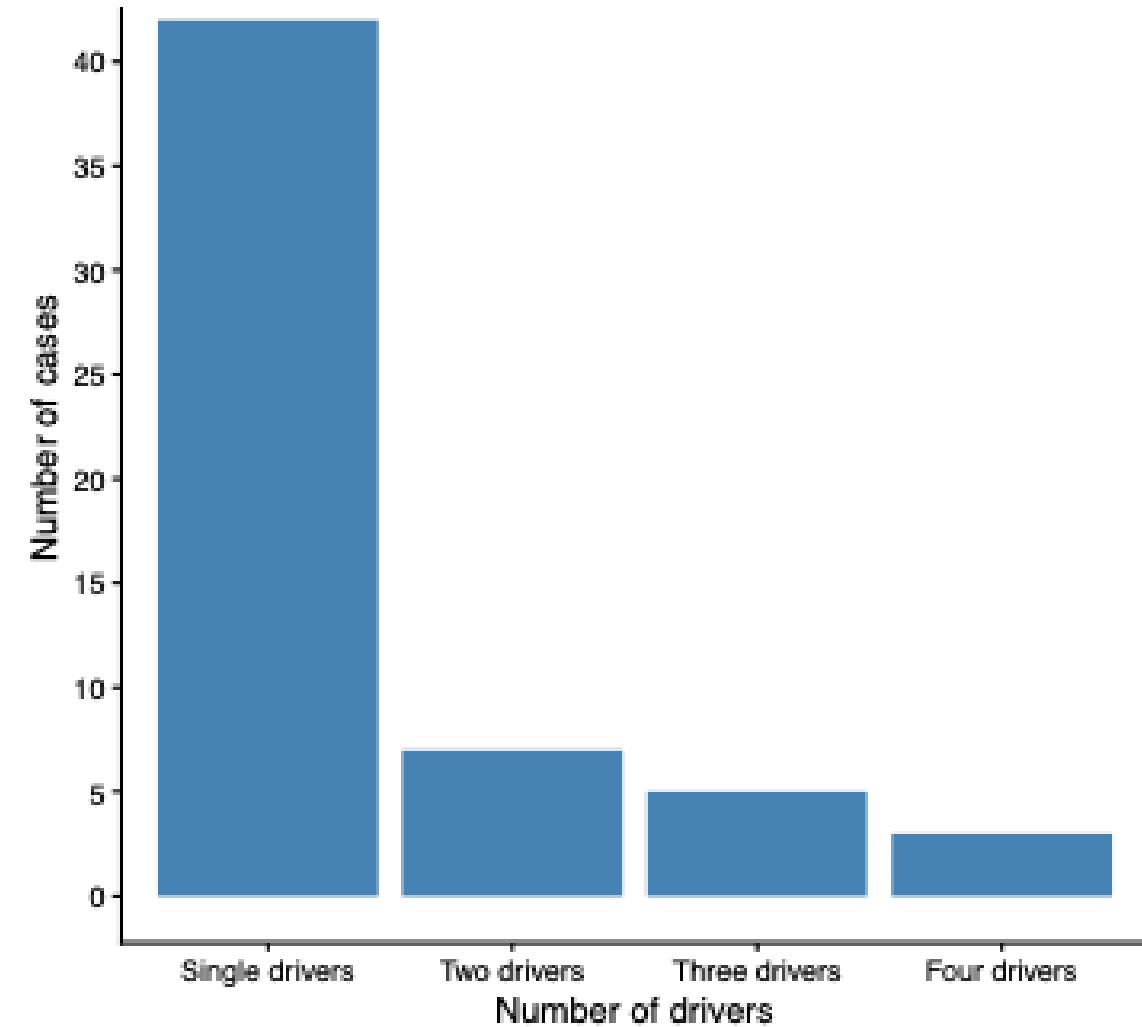
Fuel price increased, fishing pressure decreased
Russo et al., 2015

High cost of legal gears mean fishers continue using illegal gears, increasing fishing pressure
Islam et al., 2018

Context is important!

Results

Are drivers looked at in combination or individually?



Most studies looked at these drivers separately

Always considered either:

- Policy and governance drivers
- Economic drivers

Main takeaways



Policy works but governance motivations need to be aligned with pressure reduction

Research into distal drivers is narrow

Drivers overlap and likely interact but most papers only assess them individually

