# The socioeconomic impact of FMD: protecting livelihoods, markets and investment

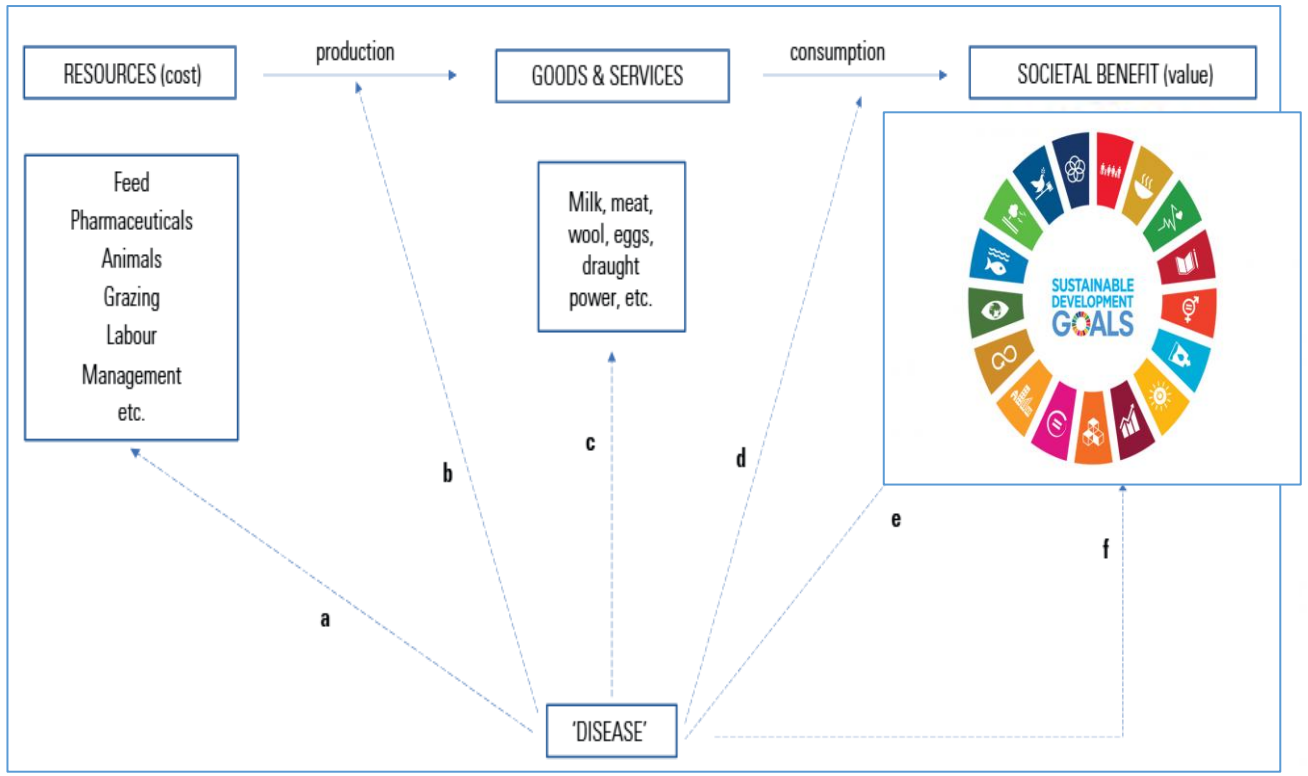
**Bouda Vosough Ahmadi (FAO)**

*TAFS Forum Conference, 29-30 September 2026*

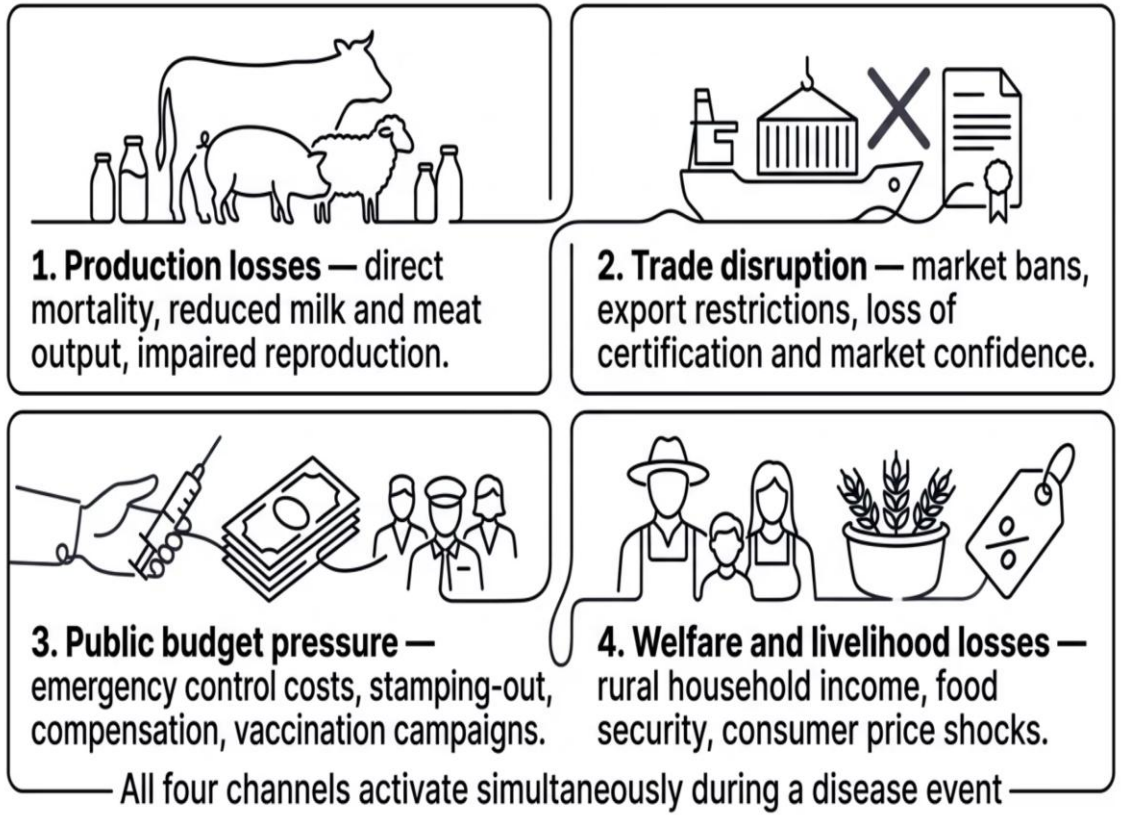
*Addi Ababa, Ethiopia*



# What does an FMD outbreak take away?




*Adapted from Huntington et al (2021) and McInerney (1996)*

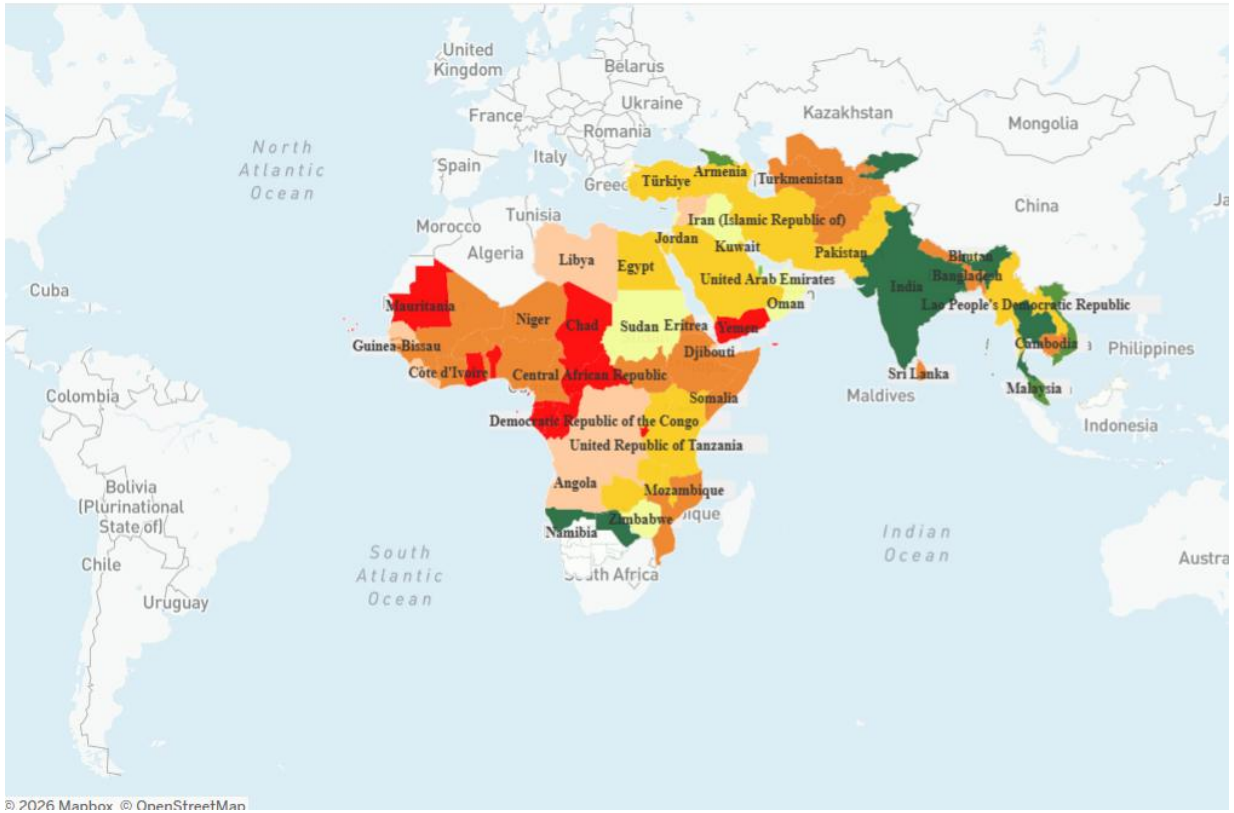



*Adapted from Dijkhuizen and Morris, 1997*

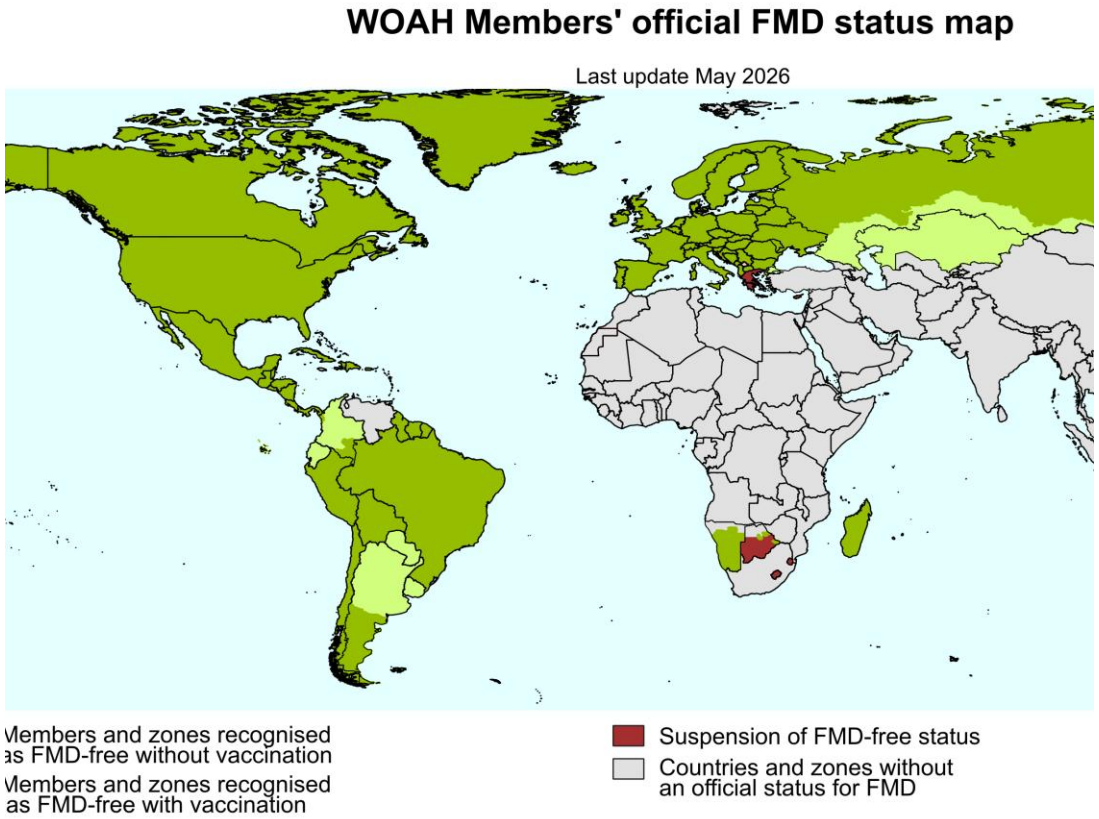
# Endemic versus free

## Endemic setting

FMD-PCP Stages




## Free setting



# One disease, different economic questions

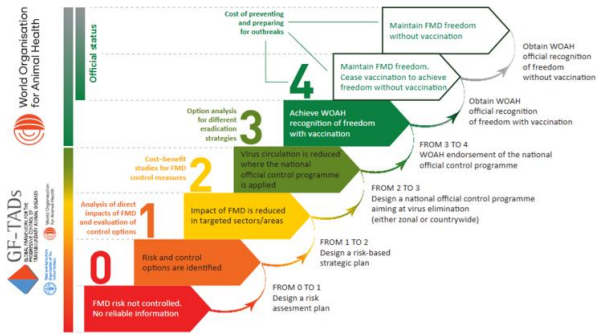
## ENDEMIC SETTINGS

### How much should we invest to reduce recurring losses?

- Regular outbreaks; damage varies over time
- Existing control measures and recurrent expenditure
- Programme coverage and PCP-FMD progress differ

**At early stages:** limited reliable information; control often ad hoc. Losses may be substantial but need assessment.

The stages of the PCP-FMD, with the economic analyses appropriate for different stages identified




*Source:* **FAO, OIE & EUFMD.** 2018. *The Progressive Control Pathway for Foot and Mouth Disease control (PCP-FMD): Principles, stage descriptions and standards*, second edition. Rome and Paris. https://www.fao.org/3/CA1331EN/ca1331en.pdf.

## FMD-FREE SETTINGS

### How much should we invest to protect freedom and prepare?

- Incursion risk persists; consequences can be severe
- UK 2001: a reminder of catastrophic costs
- Germany and Hungary 2025: freedom remains vulnerable

Stronger surveillance, early warning and response can limit damage; they do not eliminate risk.

## SHARED ECONOMIC INTEREST

Cross-border disease risk and market disruption connect us all.

Trade and price effects can extend beyond affected countries.

**Different national questions. A shared case for regional and global action.**

# Why does control remain underfunded?

The economic case must also address affordability, delivery and incentives.

| CONSTRAINTS TO ADDRESS | THE ECONOMIC QUESTION |
| --- | --- |
| **Public budgets and competing priorities**<br>FMD competes with other animal-health, food-security and public-service needs. | **How much funding is justified, and what would it displace?** |
| **Capacity to deliver sustained control**<br>Staff, surveillance, cold chain and monitoring need reliable recurrent funding. | **What is the full cost of delivering and sustaining effective control?** |
| **Vaccine access and supply**<br>Availability, procurement lead times and delivery can constrain programme implementation. | **How can predictable financing support reliable vaccine access?** |
| **Farmer affordability and incentives**<br>Willingness to pay differs from ability to pay. Benefits can extend beyond the paying farmer. | **Who benefits, who can pay, and where is public support justified?** |

## A strong investment case must show both value and feasibility.

Estimate avoided losses, cost the complete programme and agree who finances delivery.

# What do we know about the scale of losses?



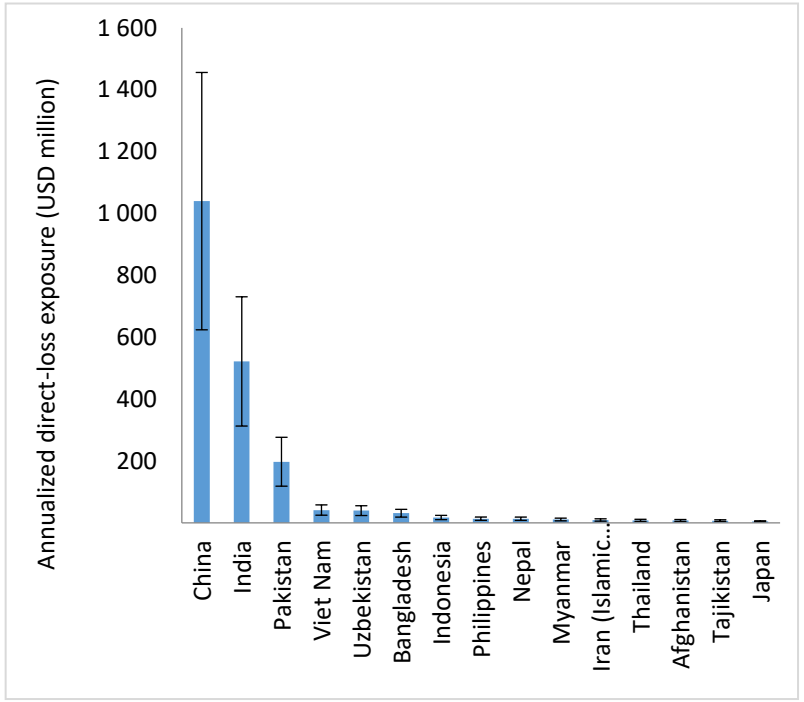

*FAO rapid economic assessment (2026): **potential** FMDV SAT1 spread across 33 Asia-Pacific countries*

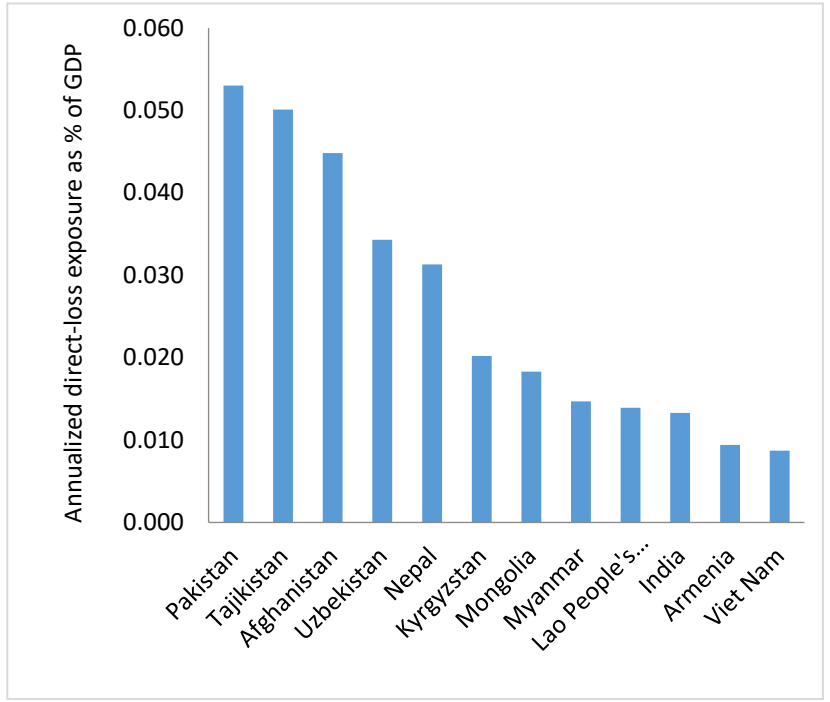
*https://openknowledge.fao.org/items/4b1a910c-ac49-4fd1-8581-e6d689849203*

**3-YEAR REGIONAL POTENTIAL DIRECT-LOSS EXPOSURE ENVELOP**

| LOW | MEDIUM | SEVERE |
|---|---|---|
| **US$ 1.2 bn** | **US$ 6 bn** | **US$ 18.7 bn** |
| early detection & effective containment | control in place, but wider exposure first | delayed control & wider spread |

*Excludes trade bans, control costs, herd asset losses and wider market effects; the true burden could be substantially higher.*




*Which countries are most exposed depends on the lens: China, India and Pakistan dominate in absolute terms relative to GDP, but smaller agriculture-dependent economies (Pakistan, Tajikistan, Afghanistan, Nepal, Uzbekistan) are the most vulnerable.*

# What would effective control actually cost?

A multi-year programme budget needs three distinct cost accounts

## Establish capacity

Initial investment

- Facilities, equipment and systems
- Training and programme design
- Baseline data and evaluation plan

## Sustain delivery

Recurring expenditure

- Vaccines, delivery and personnel
- Surveillance and diagnostics
- Monitoring, coordination and upkeep

## Enable participation

Costs beyond the public budget

- Farmer time and travel
- Delayed sales and extra feeding
- Reporting and compliance costs

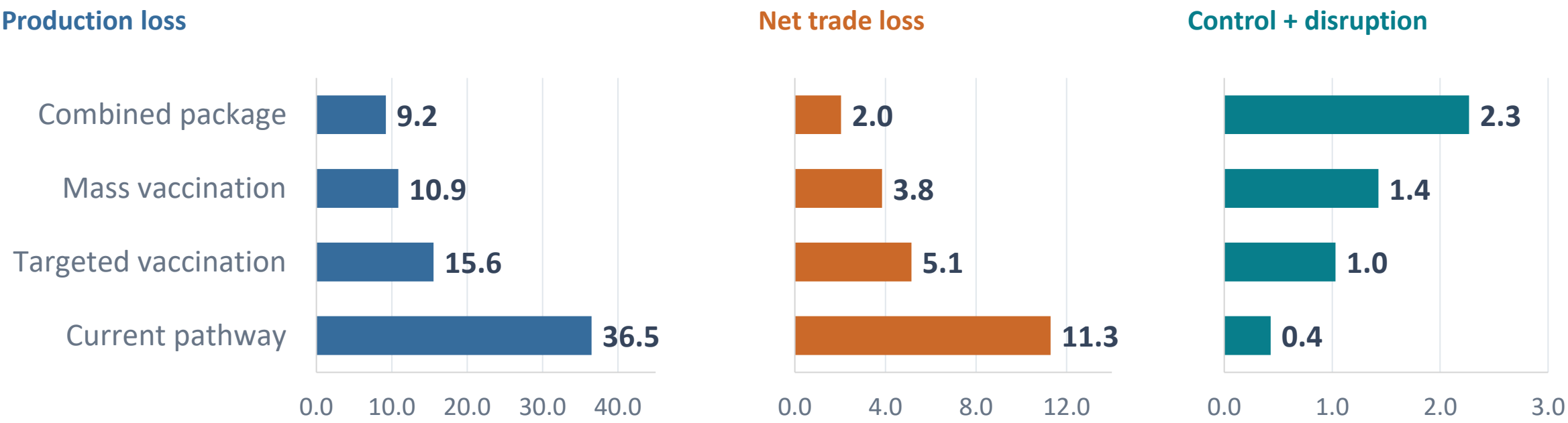
Economic cost, annual cash needs and emergency reserves answer different questions.

**The cost of a programme includes delivering it and sustaining participation**

# South Africa: control spending changes the loss profile

Six-year discounted scenario accounts, ZAR billion

Production, trade and response costs shown separately




Combined package: targeted vaccination and compartments. Each panel has its own scale.

**Greater control spending can reduce both production losses and trade disruption**

Source: Author's estimation. Prototype assumptions, not a forecast. Routine revaccination costs are incomplete.

# The investment ranking depends on the objective

Rwanda modelling study: long-term control options against a no-control baseline

| Modelled strategy | Annual public spending[1] | Reported benefit–cost ratio |
|---|---|---|
| Quarantine | US$122,000 | **46.34** |
| Targeted vaccination | US$921,500 | **12.16** |
| Combined measures | US$3,129,000 | **4.15** |

**Combined control gives the largest disease and production gains.**

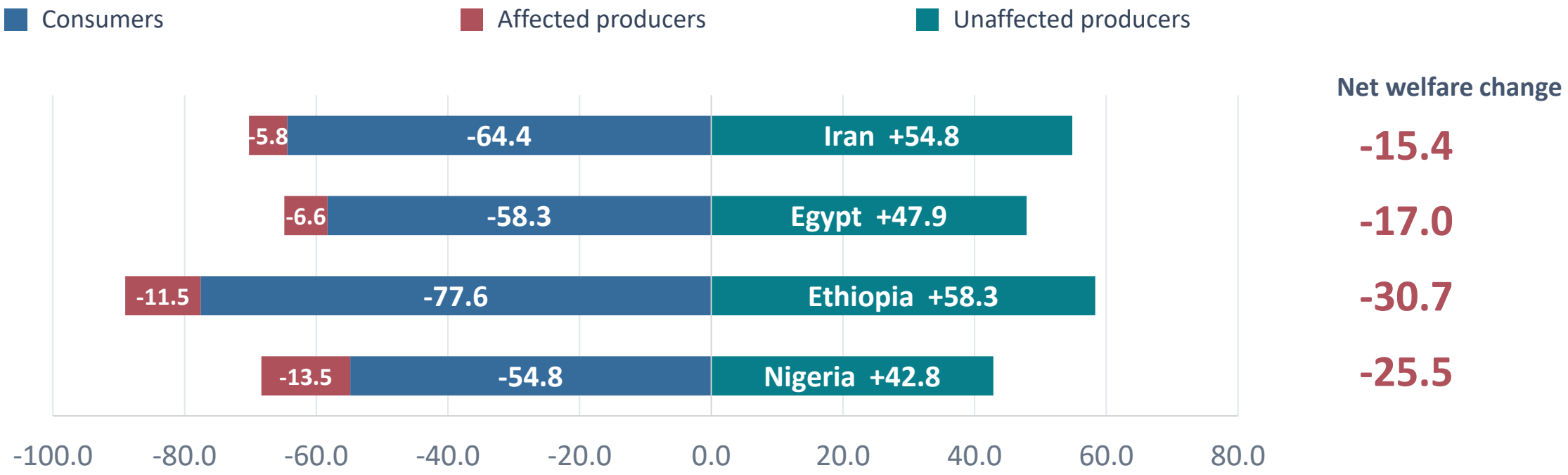
The ratios use additional meat and milk revenue and public control costs.
Producer disruption costs are incomplete. Fixed prices omit market responses.

**A high benefit–cost ratio alone does not select the best national strategy**

[1] Spending and ratios as reported in Table 3. Jean-Pierre et al. (2026), doi:10.1016/j.agsy.2026.104798

# Market effects redistribute losses across society

A partial-equilibrium model (results shown for four countries)  Annual milk and beef impacts, US$ million



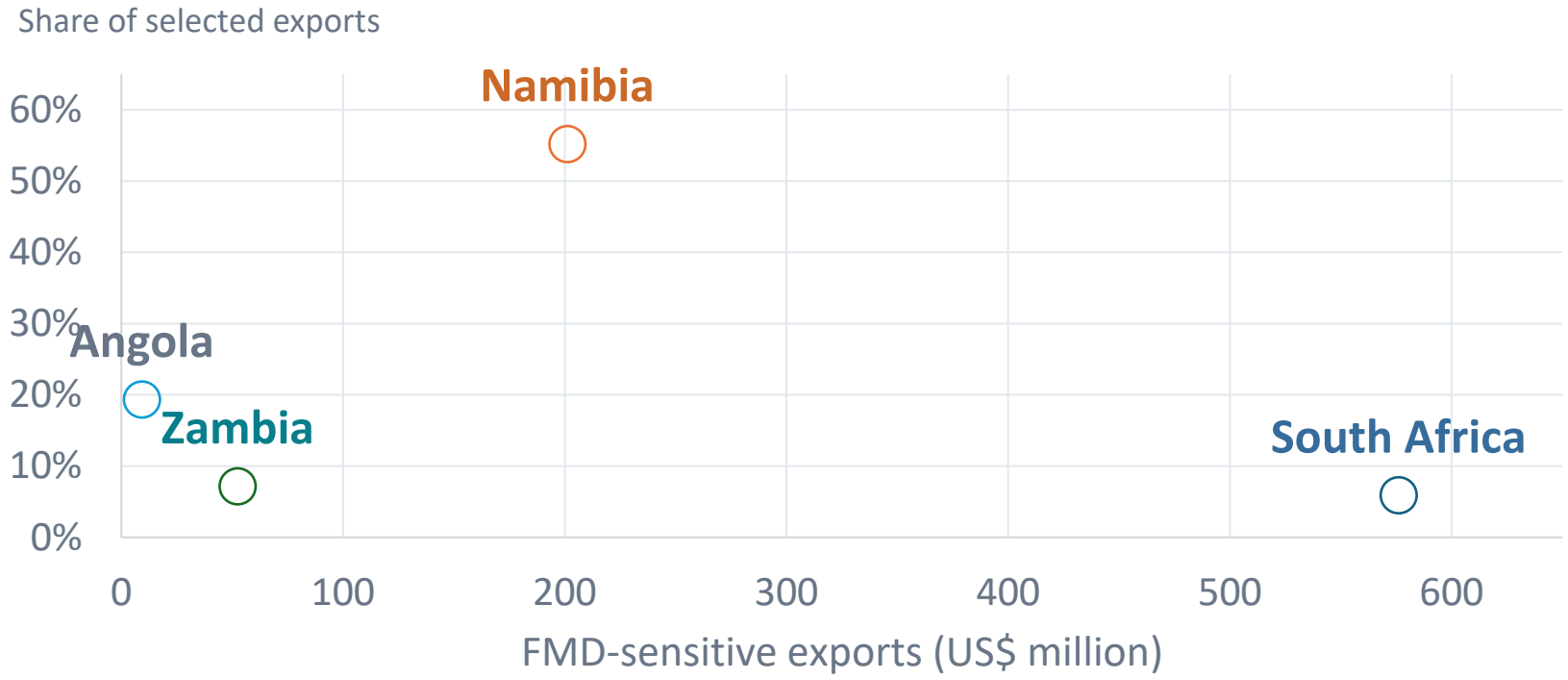

Higher prices can benefit unaffected producers while consumers and affected farms lose.

**A national total hides who bears the cost and who has an incentive to act**

Source: Author's model, using country PE defaults. Illustrative screening outputs, not observed country losses. Trade and programme costs excluded.

# Export value and dependence imply different priorities

Southern Africa, 2024 FMD-sensitive exports and share of the selected trade basket




12 reporting countries

**US$948m**

FMD-sensitive exports

**Namibia 55.2%**

**South Africa 5.9%**

Share of the selected basket, not all national exports

Crop/plant SPS exports in the same dataset: US$16.4bn. This is context, not FMD exposure.

**South Africa has the largest value exposed. Namibia has much greater dependence.**

Source: Author's calculations based on UN Comtrade 2024. Four contrasting exporters shown. Selected-basket denominators corrected for overlapping HS codes.

# Trade resilience has a measurable economic value

Illustrative gross export exposure, using the US$947.6m recorded annual trade baseline of 12 SADC countries

## Exposure under different interruption scenarios (US$ million)

| Interruption | 25% disrupted | 50% disrupted | 75% disrupted | 100% disrupted |
|---|---|---|---|---|
| 3 months | **59** | **118** | **178** | **237** |
| 6 months | **118** | **237** | **355** | **474** |
| 12 months | **237** | **474** | **711** | **948** |

### Six-month example

**US$474m**

if all selected exports are interrupted

**US$237m**

if half of baseline exports continue instead

Market recognition, certification and accepted trade arrangements determine how much access persists.

**Preserving half of trade for six months keeps US$237m of gross exports flowing**

Scenario arithmetic, not a loss forecast or benefit–cost result. Excludes rerouting, prices, margins, direct losses and control costs.

# Who benefits, who pays, who can afford it?

A financing agreement must connect shared benefits with feasible contributions




**Ability to pay and the cost of delivery determine whether participation is feasible**

# The economics of reaching the livestock keeper

A vaccine investment only delivers its expected return if the whole pathway works




**The purchase price is only one part of the cost of sustained protection**

Concept adapted from GALVmed's market-systems framework. FMD application by the presenter.

# Where economic evidence should go next

The next step is to explain when a worthwhile programme becomes feasible

01

## Which losses can control actually avoid?

Test disease, production and market effects under realistic scenarios.

02

## What prevents participation and delivery?

Measure affordability, incentives and the full cost of reaching farmers.

03

## Which investment remains worthwhile over time?

Compare feasible packages and test the assumptions that change the decision.

**Economic modelling and evidence from delivery should inform the same decision**

# FAO’s new GPP-TAD programme

Global Partnership Programme for Transboundary Animal Diseases




**An opportunity to connect costed national priorities with partners and finance**

# Global direction, regional support, country action

A revised global framework connects with regional FMD strategies already developed

**GLOBAL STRATEGY REVISION**

**2027–2037**

PCP-FMD retained • stronger outcome monitoring
Aligned incentives and public–private responsibility

**MIDDLE EAST / WEST AFRICA / EAST AFRICA**

## Coordination

Cross-border cooperation and shared priorities

## Capacity

Stronger services and preparedness

## Evidence

Risk, impact and control analysis for decisions

**Country programmes turn this support into implementation and measurable results**

Sources: FAO FMD Activities, 22 Sep 2026, slides 5, 7–8; Middle East Regional Roadmap 2026–2030.

TAFS Forum Conference, 29–30 September 2026. Addis Ababa, Ethiopia

# What should countries take forward?

A practical economic agenda for the next national planning cycle

**01**

## A realistic baseline

Disease losses, existing spending and the groups bearing the burden

**02**

## A costed control package

Feasible options with full delivery costs and explicit annual funding needs

**03**

## An agreement on contributions

Public and private roles that reflect benefits, affordability and incentives

**04**

## A review that changes decisions

Track results and delivery constraints then adjust the programme

**A credible investment proposal links expected benefits to an affordable delivery plan**

# FMD control is a shared economic interest

Different starting points give countries complementary reasons to invest

**ENDEMIC SETTINGS**

## Reduce recurring losses

**FMD-FREE SETTINGS**

## Protect against costly incursions

**SHARED INTEREST**

**Sustained national action.**
**Coordinated investment across borders.**

# Acknowledgment


- FAO and WOAH colleagues, including the GF-TADs FMD Working Group, FAO GPP-TAD team, for collaboration and technical contributions.
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- Livestock keepers and animal-health professionals whose livelihoods and daily work give these economic questions their meaning.

*Thank you*

