# Promote local agriculture production and rural livelihoods

Policy area nominated by Namibia



africanyouthnewspaper Follow ...

**africanyouthnewspaper** 7w

Ongongo, Namibia, May 14 -- The evaluation of improved Mahangu (pearl millet) varieties by the Namibian Agronomic Board (NAB) in collaboration with the University of Namibia (UNAM) marks a significant milestone in agricultural innovation and local food security. Initiated in response to farmers' concerns over seed quality and yield, this project began in 2020 with the introduction of 24 international varieties. The goal was to identify those best suited to Namibia's unique soil and climate, spread across various production zones. After rigorous screening, five promising varieties are now under evaluation against three local varieties for distinctiveness, uniformity, and stability. At a Farmers' Field Day Visit held on 12 May 2026 at the Ogongo Campus trial site, Research

7

May 14

# Pearl Millet Production Support

- Example policy
  - **Support 1,000 hectares of rainfed pearl millet per year for five years through improved seed, good-agricultural-practice support, field days, light monitoring, and market-readiness coordination**
- Counterfactual
  - **Business-as-usual rainfed production with existing seed, practices, advisory access, storage, and market arrangements; only yield gains above BAU are counted**
- Evidence base:
  - **The case is anchored in local Namibian evidence: NAB price, yield, and enterprise-budget data; NAB/UNAM pearl millet variety trials; and a clear BAU yield counterfactual**
  - **However, the yield effect is transferred from agronomic trial evidence rather than measured in a farmer-scale impact evaluation**

# Pearl Millet Production Support

- Benefits:
  - **Policy yield – BAU yield = 2.40 – 2.11 = 0.29 tons/ha yield gain**
  - **Extra output/year = 1,000 ha × 0.29 tons/ha = 290 tons/year**
  - **Annual benefit = 290 tons × Producer price N$5,309/ton = N$1.54m/year**
  - **Present Value benefits = Annual benefit × 5-year PV factor at 6% = N$1.54m × 4.465 = N$6.9m**
- Costs:
  - **Extra harvesting, handling, storage, and transport costs = 290 tons × N$900/ton = N$0.26m/year**
  - **Farmer opportunity cost/year = 1,000 ha × N$150/ha = N$0.15m/year**
  - **Public extension support and training package = 1,000 ha × N$600/ha = N$0.60m/year**
  - **Annual coordination cost = N$0.20m/year**
  - **Set up cost = N$0.50m**
  - **Present Value costs = PV of annual costs + Year-1 setup cost = N$1.21m × 4.465 + N$0.50m = N$5.9m**
- BCR:
  - **BCR = PV benefits / PV costs = N$6.9m / N$5.9m = 1.2 FAIR**

# Agricultural Subsidies

Policy area nominated by Malawi

# Fertilizer Subsidy

- Fertilizer use below optimal level for maximizing profit
  - **Smallholder farmers**
  - **Risk aversion, lack of cash flow, lack of knowledge**
- Lower price with subsidy -> usage increase -> yield increase
  - **Farmer profits increase by more than the cost of additional fertilizer**
- Costly
  - **All fertilizer subsidized, not just the additional**
  - **Sometimes so cheap, fertilizer not used well**
- Politically alluring


2023/24
AFFORDABLE
INPUTS
PROGRAMME
(AIP)
ARMING SEASON

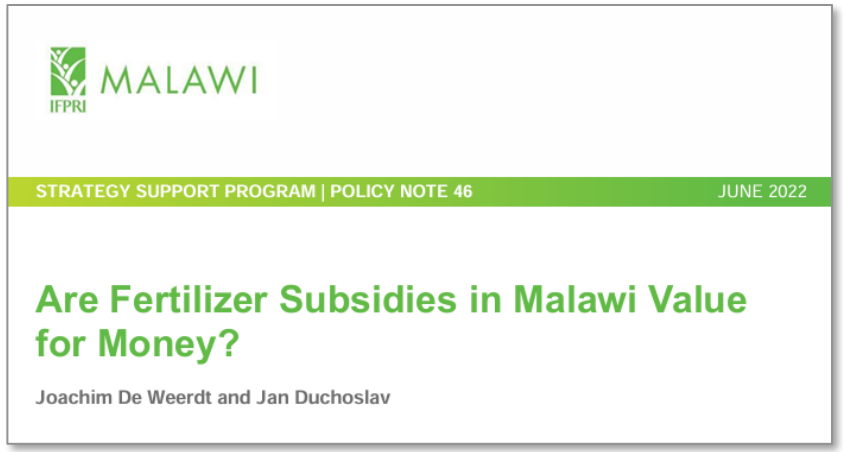
# Cost-benefit ratios are typically POOR

- Broad, permanent fertilizer subsidies in Africa usually look weak on cost-benefit grounds
  - **Low real-world yield response, dead weight losses, and fiscal opportunity costs**
- The better-supported cases
  - **Policy solves a specific failure, needs to be temporary: e.g. strengthen farmer-dealer links in private fertilizer market, increase fertilizer use (learning)**
  - **Targeted, self-targeted, or temporary voucher designs**

# “Fertilizer has an agronomic yield response" is not enough

- A fertilizer-subsidy CBA needs to include whole chain:
  - **Fertilizer delivered to intended farmers**
  - **Actual additional fertilizer use after crowd-out**
  - **Crop response under real farm conditions can be surprisingly low**
    - lower than 1kg maize per 1kg additional fertilizer
  - **Local crop prices**
  - **Food market effects, requires a national-scale market model to quantify consumer benefits**
  - **Full fiscal and resource costs**

# 2022 IFPRI policy note




- National survey-based analysis
  - **Applying 100 kg of chemical fertilizer increased maize production by 30.9 kg on average**
  - **Subsidizing 100 kg of fertilizer increased fertilizer application by only 31.6 kg because subsidies displaced private purchases**
  - **Combining low response with crowd-out made the subsidy effect on maize statistically indistinguishable from zero**
- Fiscal cost-benefit ratio
  - **$1 spent on subsidizing fertilizer produced maize worth $0.08**
  - **Producing an extra kilogram of maize through imported fertilizer was much more expensive than importing maize directly at the time of the note**
- But, not all farmers are unproductive
  - **Many can turn fertilizer into maize productively**

MaSSP Policy Note 46

# Thought:

Would incremental spending on better targeting, extension, and monitoring for a block of existing AIP fertilizer generate enough additional maize value to justify the reform costs?

# Targeted AIP Fertilizer Subsidy Reform

- Policy option:
  - **Reallocate 100,000 fertilizer bags per year to 50,000 higher-response soil / more productive smallholders**
  - **Supported by registry, soil-health and farm-management extension**
- Finding:
  - **The incremental reform looks attractive: BCR 5.0, NPV MWK 4.51bn, and 1,725 extra tons of maize per year**
    - But, political issues
    - And, not the BCR of the whole fertilizer subsidy package. If the full fertilizer resource cost is counted, the BCR falls to 0.5

# Choice of counterfactual matters

- Business as usual in the reform case:
  - **The same fertilizer remains inside AIP but reaches the existing or weakly verified beneficiary mix, with delays and lower average maize response**
- Reform scenario:
  - **The same block of fertilizer is redirected toward higher-response farmers, with better targeting, extension, and monitoring.**
  - **The CBA therefore counts only the incremental maize value from better targeting, not the full value of all maize produced with subsidized fertilizer**

# Ideas to increase BCR of the entire program (if it cannot be ended)

- Distribute the subsidy as a cash grant
- Self-selection:
  - **raise farmer co-payment -> lower subsidized volumes**
  - **unproductive farmers know that they are unproductive**
- Self-selection:
  - **offer choice between a cash grant or purchasing subsidized fertilizer**
  - **productive farmers know that they are productive**

# Sustainability, Climate & Food Nutrition Security

Policy area nominated by Zimbabwe

YouTube SE
Search



# 'Pfumvudza' (Field Demonstration)

Climate Smart Jobs
183 subscribers
Subscribe
11
Share
Save
Download

# Expand extension for Pfumvudza planting-basins

- Business as usual
  - **The Presidential Inputs Scheme distribute maize seed and fertilizer to eligible households, with extension messaging on conservation agriculture**
- Addition
  - **For a five-season training pilot, 100,000 households per season receive added extension follow-up, plot verification, and quality-assurance monitoring so a 0.125 hectare maize plot is prepared and managed as a Pfumvudza planting-basin plot**
- Effect size used:
  - **Planting basins outperformed conventional practice in a Zimbabwe meta-analysis**
  - **0.365 ton/ha increase from controlled study on sandy soils of Pfumvudza vs. conventional**
  - **2.5x – 5x increase (5 ton/ha) success stories, but not corroborated**

# Expand extension for Pfumvudza planting-basins

- Benefits:
  - **Plot size × yield gain × (1 – post-harvest loss) × maize price = annual benefit**
  - **0.125 ha × 0.365 t/ha × 90% = 17 kg**
  - **Government set producer price US$364.75/t x 17 /1,000 = US $6.19 annual maize benefit, or US$ 619,000 for 100,000 farmers**
  - **1 kg maize production emits 0.5 kg $CO_2$ (world average)**
  - **Avoided 8.5 kg $CO_2$ x $0.09 ($90 per ton in EU carbon market) = US $0.77**
- Farmer cost:
  - **Farmer additional preparation /compliance time. Say, minimum 1 day per year**
  - **Lowest domestic worker minimum wage US$ 90/month x 1/21 = US$ 4.29 minimum annual time cost , or US$ 429,000 for 100,000 farmers**

# Expand extension for Pfumvudza planting-basins

- Benefit: US$ 619,000 + US$ 77,000 = US$ 696,000
- Farmer time cost: US$ 429,000
- Additional public extension cost
  - **Program set-up**
  - **Incremental extension worker time for follow-up, monitoring, and verification effort beyond BAU extension, materials, transport**
  - **If more than US$ 2.67 per farmer and year, or, US$ 267,000 in total additional program cost per year for 100,000 farmers, then BCR is POOR, less than one**

# Development of smallholder irrigation schemes, Agriculture and Resilience Building

Policy area nominated by Zambia and Lesotho


THE FALCON

# What does the irrigation evidence say?

- Irrigation can generate high returns
  - **but there is no single "irrigation effect size" that should be copied into every CBA**
- Returns depend mainly on:
  - **Utilization + crop mix and market access + reliable O&M and water-user management + adoption speed + capital-cost control**
  - **= whether irrigation becomes high-return or disappointing**
- Small-scale, farmer-managed or private-service irrigation often performs best when low-cost technology is linked to high-value crops and markets
  - **Example irrigation scheme enabling switch from maize and peas to vegetables or cash crop possible to sell in nearby town without additional investments**
- Larger public schemes can also be viable, but only if utilization, crop choices, O&M, and farmer engagement match the assumptions

# Irrigation can mitigate drought loss

- Droughts can lead to huge losses
  - **Loss of majority of household income**
  - **Fire sales of assets**
- Value of avoiding loss can be estimated by
  - **Summing up the value of loss under different scenarios x likelihood**
  - **Survey willingness to pay for reducing risk**
- Annual cost of insurance could be used as a starting value
  - **Not available for smallholder farmer**
  - **But commercial premiums are 5% to over 12% of insured revenue depending on the severity of regional historical droughts**
  - **Reasonable proxy: 10% of BAU income per year**

# Irrigation CBA structure

- Benefits
  - **Yield response to irrigation is a misleading pathway**
  - **Farm income (entire year) with irrigation vs. farm income under BAU (no irrigation) with different crops and number of croppings**
- Costs
  - **Capital cost + rehabilitation / extension / market support + O&M + incremental farmer time and costs**

# What was ruled out in Malawi Priorities CBA?

- High-cost irrigation infrastructure
  - **Typical capital cost (~USD 18,500/ha) and recurrent cost (~USD 2,400/ha/year) exceed the value of additional output for most crops → POOR below 1 BCRs**
- Solar-powered irrigation (as currently implemented)
  - **Solar systems have higher upfront costs and lower economic returns compared to gravity systems**
- Irrigating low-margin staples (e.g., maize)
  - **Maize yields do not increase enough under irrigation to justify the cost. Irrigating maize almost always produces poor returns**
- Large-scale, untargeted expansion (blanket rollouts)
  - **Without strict cost control and crop selection, national-scale irrigation programs risk very low cost-effectiveness**

# What did OK in Malawi Priorities CBA?

- Low-cost gravity irrigation systems
  - **Gravity-fed schemes consistently deliver higher BCRs because capital and operating costs are far lower than solar or pump-based systems**
- High-margin, water-responsive crops
  - **Irrigation is economically viable when paired with crops like tomato, paprika, cassava, which generate large gross margins that exceed irrigation costs**
- Targeted, small-scale expansion
  - **Irrigation investments focused on specific high-return sites (good soils, reliable water sources) outperform broad national expansion**
- Irrigation linked to commercialization
  - **Returns improve when farmers have access to markets, storage, and value chains that allow them to sell high-value crops.**
- The lesson is not ‘don’t irrigate’ — it’s ‘irrigate smartly’