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The U.S. Government's Global Hunger & Food Security Initiative

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FEED THE FUTURE GLOBAL SUPPORTING SEED SYSTEMS FOR DEVELOPMENT – S34D

Metrics for Seed Systems – A Comparative Review of ASI, EBA, and TASAI

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S34D Consortium Partners

S34D Quick Facts

- Life of Activity: 2018 – 2023
- Sponsors: Feed the Future through RFS / USAID through OFDA
- Consortium: Catholic Relief Services, CIAT/PABRA, IFDC, Opportunity International, Purdue University, Agri-Experience
- Key Partners: PIATA; AVISA; ISSD Africa; TASAI; Seeds2B, IITA
- Service Providers: Dimagi, Kuza, New Markets Lab
- Geography: Global—responding to any USAID Mission's request

Activity Goal & Vision

- S34D's global experts in formal and informal seed systems, and humanitarian and emergency aid programming provide technical assistance that complement ongoing host government and USAID investments.
- S34D is unique in that we operate on the interface between the different systems.
- The Technical Assistance will address identified needs and gaps in the seed system and will strengthen the seed system to meet the agriculture-led inclusive economic growth objectives from the host government and USAID.
- S34D's vision is improved choices for farmers to access quality seeds for resilient livelihoods.
- S34D's goal is to improve the functioning of seed system through customized services to upgrade seed systems.

INTRODUCTION

Seed systems are diverse but most smallholder farmers get seeds from local, informal channels



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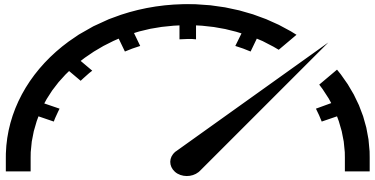

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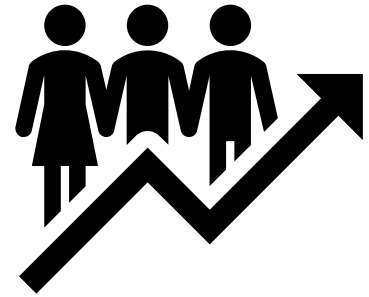


The Mind
Can Only Be
Confused

OBJECTIVES OF THE WORKSHOP

- **Share our summaries and recommendations**
- **Validate our understanding about the metrics**
- **Arrive at a shared understanding of the current gaps**
- **Discuss approaches to strengthen existing metrics**
- **Derive next steps to address key gaps as a community-of-practice**

WORKSHOP OUTLINE

1. **Overview of the metrics – ASI, EBA, TASAI**
2. **A comparative summary of findings**
3. **Thoughts on improving existing metrics**
4. **Approach to analyzing current gaps in metrics**
5. **Discuss approach to address gaps – eg. metrics, data sources, etc.**
6. ***Brainstorming session!***
7. **Conclusions and next steps**

OVERVIEW OF METRICS

WHAT IS MEANT BY SEED ACCESS?

A farmer with access to seed has the entitlements needed to acquire the plant reproductive material she or he wants

- Choice implies some diversity in the marketplace
- Seed availability refers only to *quantity* in a given space and time
- Access to the genetic resources embodied in seed refers to *quality*, including physical and variety attributes

McGuire, S. and L. Sperling (2011)
Lipper, L., L. Anderson, and T. Dalton (2010)

STATED AIMS

Index	
ASI	“Measures and compares the efforts of world’s leading seed companies to enhance the productivity of smallholder farmers…ranks companies against each other rather than an absolute, ideal state”
EBA	“Improving knowledge and understanding of the business environment in agriculture and strengthen information base…for policy dialogue…pre-conditions for access to seed”
TASAI	“Promote the creation and maintenance of enabling environments for competitive seed systems serving smallholder farmers”

PROPERTIES

Index	Subject	Scale	Geography	Crops	Format
ASI	Company	Global or regional	Latin America, W, E & Southern Africa, South & Southeast Asia	Food crops (field, vegetable), some local species	59 indicators, 7 measurement areas, 4 categories
EBA	Government	National	80 countries, including high income	Maize (hybrid)	3 indicators, 32 points
TASAI	Country	National	Sub-Saharan Africa	Focus crops 4 per country	20 indicators

METHODS

Index	Data	Calculation	Scoring
ASI	farmers, companies, policymakers and experts; selection of companies based on seed revenues; global now regional	weighted scorecard; matrix of area by category performance 60%	qualitative, peer review; scoring follows guidelines approved by Supervisory Board ?
EBA	hypothetical, standardized case to ensure comparability across countries; administered to experts	distance-to-frontier and country rank per topic, linear transform to rescale	point scores mostly binary, efficiency points (time and cost) measured separately
TASAI	industry surveys, secondary data, expert key informants	qualitative (perceptions) and quantitative (count, ratio, %, Herfindahl)	scoring by indicator; no overall score; opinions graded

SUMMARY OF FINDINGS

OVERLAP

There is no redundancy because the perspective, scale, scope, and measurement differ.

The seed indexes complement each other.

UNIQUENESS

Examples

- ASI: Genetic resources, including the international treaty, and farmers' exemption
- ASI: Variety diversity, neglected and underutilized species
- ASI: Programs for women and youth; breeder collaboration with farmer associations/NGOs
- TASAI: industry competitiveness
- TASAI: smart subsidy distortions
- EBA: detailed checklist for good regulatory practice

LIMITATIONS AND ADVANTAGES

Index	Limitation	Advantage
ASI	scoring of individual indicators and assignation of weights not transparent; no smaller than regional company	broad scope; extensive documentation
EBA	narrow scope, no quality measurement	simple, comparable
TASAI	individual indicators could be improved; opinion bias	farther down the value chain then ASI or EBA

IMPROVING EXISTING METRICS – FEW THOUGHTS

TASAI
1. Normalizing certain variables so they can be compared across countries (*# of active breeders, varieties*)
2. Distinguishing between private seed companies and parastatals when deriving scores *(TZ: ASA included)*
3. Methodology used to derive scores often based on industry self-reporting (*use weights*)
4. Top seed companies include all companies (*include breakdown between domestic private sector vs others*)
5. Adequacy of seed inspector is reported at national level (*counts reported by agro-ecological zones*)
6. Herfindahl index on count (*shares and converted to Simpson diversity index*)

IMPROVING EXISTING METRICS – FEW THOUGHTS

EBA
1. Focus is on access for seed companies to gain access (*include farmer cooperatives, other seed producers*)
2. Exceptions to DUS (distinct, uniform, stable) and VCU (value in cultivation and use) testing regulations: (*e.g., only for publicly bred? Permitting farmer testing? Exempting some crops?*)
3. Includes whether VRC includes the private sector (*include other actors such as informal seed system*)
4. Re-phrasing indicators to capture information accurately (*ex: frequency of variety catalogue update*)
5. Only maize is used for certain indicators (*expanding reporting beyond maize*)

IMPROVING EXISTING METRICS – FEW THOUGHTS

ASI
1. Global company with regional or national interests is only subject of indicators (*introduce others?)*
2. Scoring of individual indicators not transparent (*report in methods?*)
3. Metrics are by company (*introduce national metrics, such as national seed production?*)

APPROACH TO ANALYZING GAPS IN METRICS

Domains	Policy, Legal, and Regulatory System	R&D Systems	Seed Quantity & Quality	Market Systems	Use / Adoption
TASAI	• Time it takes to import seed from neighboring countries (7) • Length of variety release process (10) • Status of seed policy framework (11) • Quality of regulatory system (12) • Adequacy of seed inspectors (13) • Quality of national seed trade associations (17) • Efforts to stamp out fake seed (14) • Use of smart subsidies (15)	• # of active breeders (1) • Availability of foundation seed (3) • # of varieties released in last 3 years (2) • Percent of varieties with climate-smart features (5)	• Availability of seed in small package (19) • Average age of varieties sold (4)	• # of active crop seed companies (6) • Availability of extension services for smallholder farmers (16) • Concentration of rural agro-dealer network (18) • Market share of top 4 companies (8) • Market share of current or past government parastatal (9) • Seed-to-grain price ratios at planting time (20)	

Domains	Policy, Legal, and Regulatory System	R&D Systems	Seed Quantity & Quality
EBA	• DUS testing data from other countries' authorities is accepted as official data for registration • The law establishes a VRC in a country • The composition of the legally mandated VRC includes the private sector • The frequency of VRC meetings • A variety can be commercialized immediately after the decision of the VRC • A catalog listing new registered varieties is publicly available online • The variety catalog specifies agro-ecological zones suitable for the variety • The frequency with which variety catalog is updated • Time to register a new maize variety • Cost required to register a new maize variety • There is a legal framework for the accreditation of private seed companies and/or third parties for the performance of certification activities • Private seed companies and/or third parties (non-governmental institutions) are accredited in practice for the performance of certification activities • Seed certification activities that can be performed by an accredited seed company / third party • The competent public authority is required to perform post-control tests on certified seed	• Regulation governing plant breeders' rights • Duration of PBR in years • Conditions to benefit from PBR do not differ between national & foreign applicants • List of protected vars publicly available • Companies are legally allowed to produce breeder/pre-basic seed of local public vars for use in the domestic market • Companies are legally allowed to produce foundation/basic seed of local public vars for use in domestic markets • Companies are obtaining access to germplasm preserved in publicly managed gene banks • PBR can be licensed to another party for production and sale of delivery • There are public research institutes in the country that license public varieties to companies for production and sale in the domestic market • Companies importing germplasm for the development of new varieties are required to undergo government testing (other than phytosanitary tests) • Plant breeders are required to ensure the traceability of the plant reproductive material used • Time in years during which plant breeders are legally obliged to keep the traceability records	• There is an official fee schedule for seed certification activities performed by the competent public authority • A minimum percentage of certified seed must be subject to post-control tests • The competent public authority is required to take measures in the case of noncompliance with the varietal purity standards • Seed containers must be labeled • Seed container labels must provide information • There is a penalty for the fraudulent sale of mislabeled seed bags

MAJOR GAPS

Understanding of seed system role in context of national developmental goals and agricultural transformation

Demand creation:

- Smallholder farmers are the stated object but not the stated subject of any of the indicators in any of the three indexes
- Smallholder heterogeneity and inclusion challenges not recognized
- Linkages among formal and informal systems absent
- ECR information is absent

Supply diversification:

- Differentiation of companies by volume of sales, size of employees etc.
- Production of different qualities of seed (QDS, TFL), and crop portfolios
- Emergency, free seed and other distortions

Very little information is available downstream as we move down the seed value chain. No information on adoption. How do we know we are moving the needle?

SUGGESTIONS ON ADDRESSING GAPS

LITERATURE CONSULTED

1. ***Review of the status and trends of seed policies and seed laws*** **(UN FAO; 2018)**
2. ***Access to foundation seed of varieties in the public domain*** **(ISSD KIT Working Papers; 2017-5)**
3. ***The support for farmer-led seed systems in African seed laws*** **(ISSD KIT Working Papers; 2017-9)**
4. ***Effective seed quality assurance*** **(ISSD KIT Working Papers; 2017-2)**
5. ***Understanding and strengthening informal seed markets*** **(Sperling & McGuire; 2010)**

KEY INSIGHTS

- ❑ Legal, policy, and regulatory understanding of farmer-led system is important
- ❑ Information about effectiveness of certification systems is needed
- ❑ Access to EGS
- ❑ Grain movement by traders can reveal a lot about local markets
- ❑ Parameters on local markets to assess farmers' preferences (demand side)

SUGGESTED METRICS TO ADDRESS GAPS - DISCUSSION

Policy, Legal, and Regulatory System	R&D Systems	Seed Quantity & Quality	Market Systems	Use / Adoption
• Is there a quality standard other than certified seed? • Are farmers' varieties included in the variety release system? • Does national legislation allow for local sale and exchange within farmer-led seed systems? • Are farmers represented in the – VRC; national performance trial tech committee? • Comparison of the costs for the seed producers for QDS vs Certified (as % of retail price)	• Access to foundation seed for non-commercialized crops • Do specific crop strategies/product profiles exist with the NARs? • % share of varieties listed in the official variety catalogue that had access to breeder seed	• Capacity building programs for private sector to produce foundation seed • Crop-variety portfolio of seed companies and producer orgs by geography	• How is the sale of non-certified seeds considered? • Percent share of seed produced by seed companies sold to large institutional buyers. • Share of seed produced by domestic private sector • Share of costs borne by farmers for seed inspection and certification (for QDS/TFL) • Seed/grain price ratio from local traders • Do traders group varieties by AEZs? • Do traders access new and modern varieties from formal sector players?	• Adoption rates by seed type, agroecology, farm size (spatial; gender) • Area-weighted average variety age in farmers' fields (temporal, adjusted for spatial; gender) • Proportion of farmers using own harvest vs seeds from the local market

DISCUSSION

1. Are these the right gaps?
2. Can we validate the suggested metrics? What else?
3. How can we as a community address these gaps? (define metrics, measurement methods, data sources, collection, reporting)
4. What can we do as a community of donors, implementers, and national stakeholders?

CONCLUSIONS

- It is clear the three indices are unique and do not conflict with each other
- We are not creating a fourth body of work with new indices
- There is much to TASAI in its country reports, which when combined with EBA metrics provide information at country levels that may not be known to many in-country stakeholders
- A quick regional comparison for ASI could be useful (outreach to learn more about methods)
- Efforts from both TASAI and EBA are underway to fill in some of the gaps that S34D's research independently identified – which means many aspects of gaps identified here are naturally validated with use-cases
- S34D will continue to work with EBA and TASAI to provide detailed comments on indicators and methods
- S34D activities will bring out information and data elements on informal markets, grain traders (where they are, what types of "potential seeds they move", and institutional buyers of seeds (who, how much, where)

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