Promotion and Development of Agricultural Mechanization in Zimbabwe

Eng. E S Zimunga

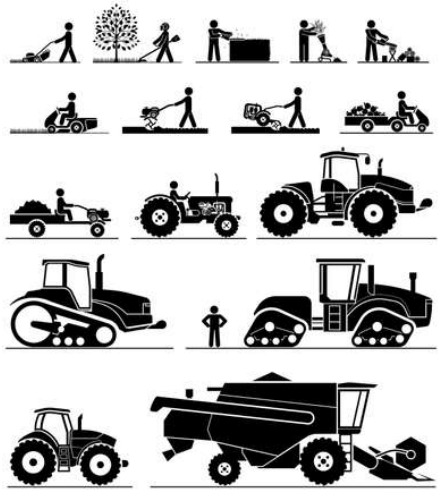
Chief Director – Agricultural Engineering, Mechanisation, Soil & Water Conservation

Ministry of Lands, Agriculture, Fisheries, Water and Rural Development

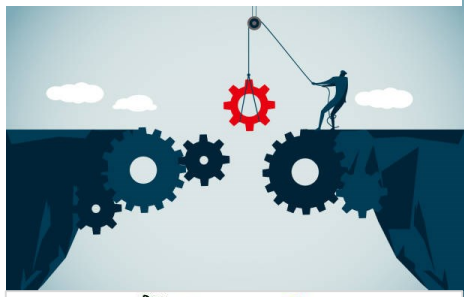
CONTENT

1. National Mechanisation Framework
2. Current state of affairs regarding agricultural mechanization in Zimbabwe
3. Agricultural mechanization gaps and challenges
4. Main constraints that hinder access and use of agricultural mechanization
5. The main opportunities for attracting more partnerships and investments to drive agricultural mechanization development

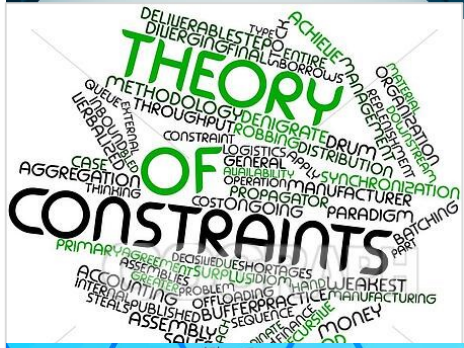
Current Status



Gaps

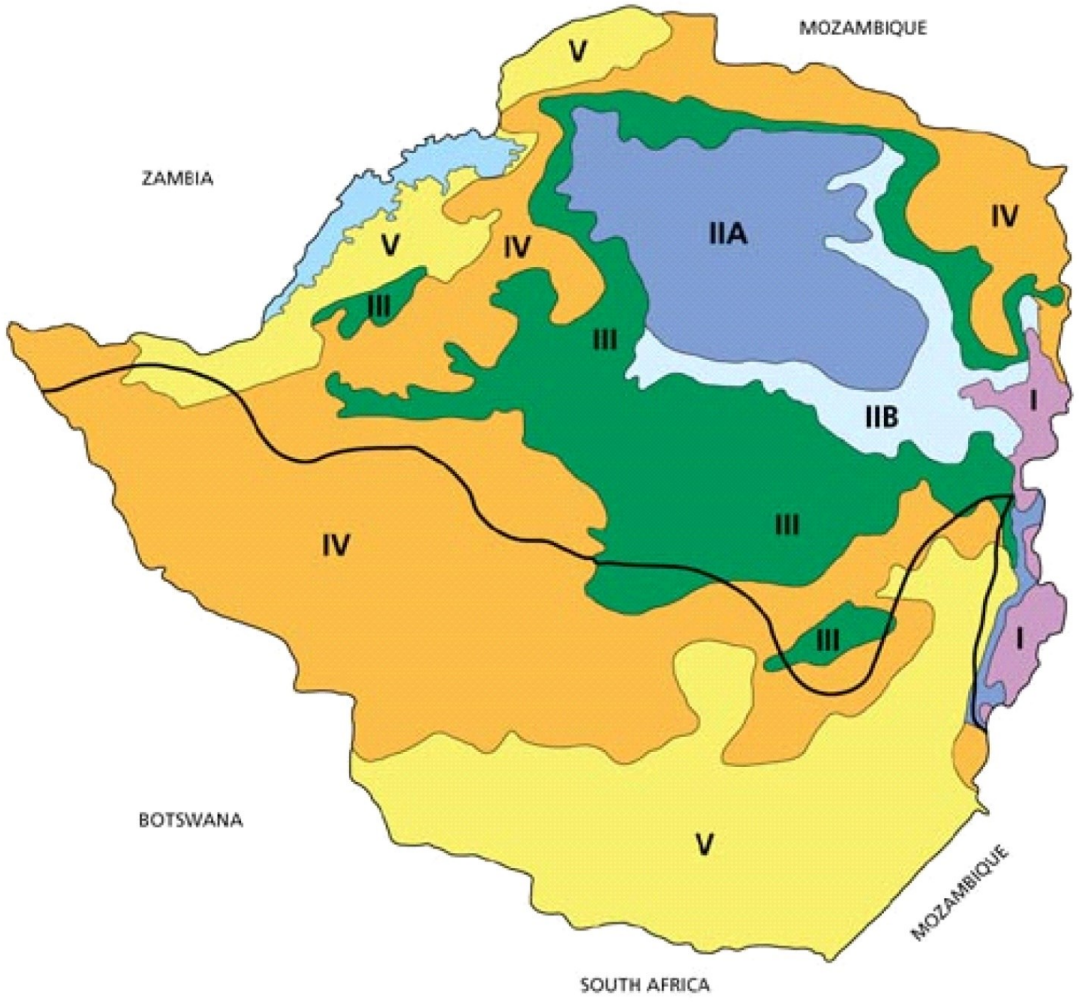


Constraints



Opportunities

Introduction - Status of Agriculture in the Country



BASED ON 5 NATURAL FARMING REGIONS

0	Area	% of total land area	Annual rainfall	Farming Systems
Region	(000 ha)	(%)	(mm)	
I	613	1.56	> 1 000. Rain in all months of the year, relatively low temperatures	Suitable for dairy farming forestry, tea, coffee, fruit, beef and maize production
II	7 343	18.68	700-1 050. Rainfall confined to summer	Suitable for intensive farming, based on maize, tobacco, cotton and livestock
III	6 855	17.43	500-800. Relatively high temperatures and infrequent, heavy falls of rain, and subject to seasonal droughts and severe mid-season dry spells	Semi-intensive farming region. Suitable for livestock production, together with production of fodder crops and cash crops under good farm management
IV	13 010 036	33.03	450-650. Rainfall subject to frequent seasonal droughts and severe dry spells during the rainy season	Semi-extensive region. Suitable for farm systems based on livestock and resistant fodder crops. Forestry, wildlife/tourism
V	10 288	26.2	< 450. Very erratic rainfall. Northern low veldt may have more rain but the topography and soils are poor	Extensive farming region. Suitable for extensive cattle ranching. Zambezi Valley is infested with tsetse fly. Forestry, wildlife/tourism

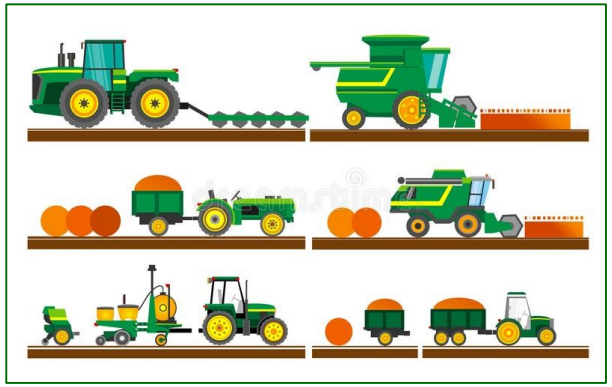
Introduction - Status of Agriculture in the Country

Land Category	Total Area	Individual Size	Ownership	1980 (Million ha)	2010 (Million ha)
Large Scale Commercial farms	1,377,000	2,200 ha	+/-300 white &black farmers	15.5 ha	3.4 ha
Small Scale Commercial farms				1.4 ha	1.4 ha
A2	2,918,334.	318 ha	16,386 farmers	0.0 ha	3.5 ha
A1	5, 759,153	6 ha (excluding grazing)	145,775 farmers	0.0 ha	4.1 ha
Old Resettlement	3,500,000	46ha (including grazing)	76,000 farmers	0.0ha	3.5ha
Communal	16, 400,40	12ha(includes grazing & forest)	1,300, 000 farmers	16.4 ha	16.4 ha
National Parks & Forests				5.1 ha	5.1 ha
State Farms				0.5ha	0.7 ha
Urban Land				0.2 ha	0.3 ha
Unallocated Land				0.0 ha	0.7 ha

HAND HELD TOOLING

DRAUGHT ANIMAL POWERED

MECHANICAL / ELECTRICAL POWERED



Introduction - Status of Agriculture in the Country

Type of Equipment	Total	Functional	Non-Functional
1. Tractors	7895	5532	2363
2. Combines	176	131	45
3. Disc Ploughs	3911	3282	528
4. Rippers	1009	929	80
5. Disc Harrows	2503	2098	405
6. Spike Harrows	348	320	28
7. Ridgers	770	707	63
8. Gang Tiller	64	49	15
9. Rollers	437	395	42
10. Precision Planters	1036	791	405
11. Seed Drills	168	136	32
12. Fertiliser Spreaders	528	448	80
13. Lime Spreaders	256	213	43
14. Multicrop Threshers	266	255	11
15. Trailers	3617	2937	680
16. Grain Dryers	67	55	12
17. Mower 18. Hay Rake 19. Hay Baler	467 134 163	383 121 130	84 13 33

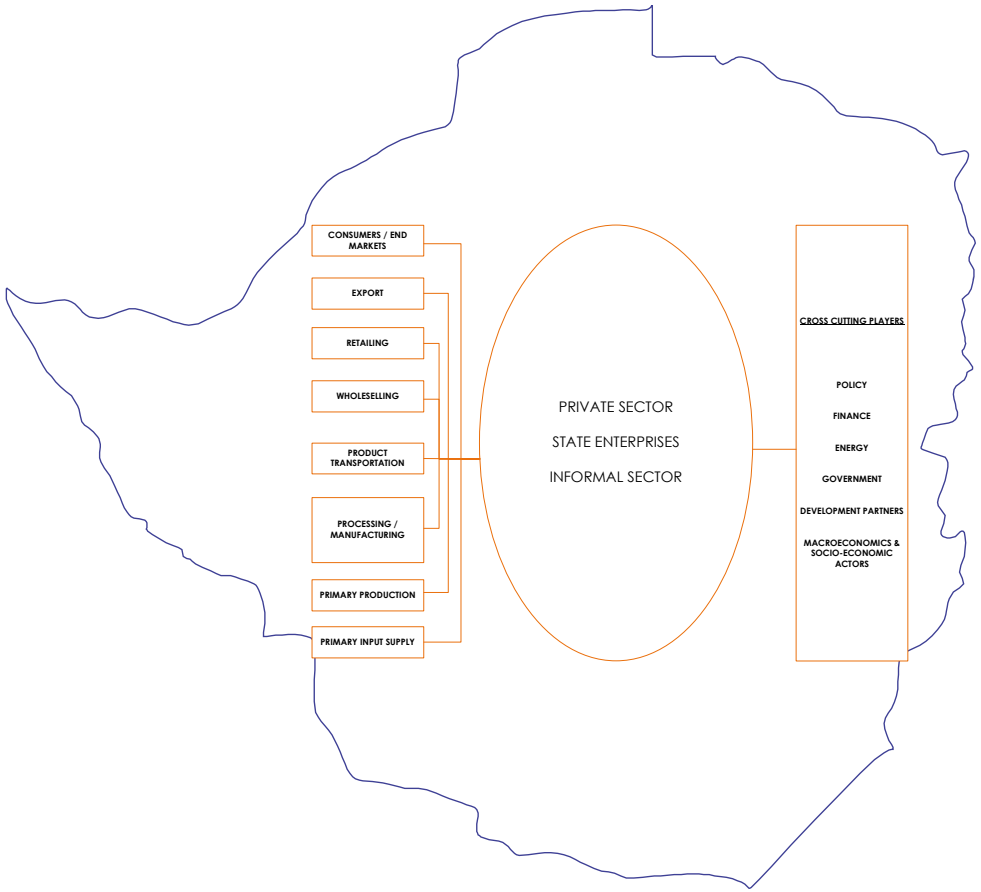
40,000

600

40,000

Why is mechanization important in the country?

- Land Reform & Vision 2030
- Primary Production based – Farm Gate Tech
- National Contribution 20% GDP
- 67 % Rural Population & livelihoods dependant on Agriculture. (60% National Population)
  - Low Productivity
  - Poor Competitiveness
- Commercialising A1 & A2 Farm Models
- Potential 33% GDP (Downstream Benefit)
- Mechanisation Key Driver
- Value chain and associated industries



Key challenges facing mechanization in Zimbabwe

- Little National Priority from Fiscus
- Farmer Profile vs Capital Intensive Nature of Mechanisation
- Investment Risk, lack of collateral etc.
- Unfair competition on locally produced products
- Lack of funding i.e. M&E, R&D, training/extension, surveys, facilities etc
- Skills flight especially for engineers
- Many farmers are still ignorant of the use of farm machines
- Lack of Standards – Importation of substandard machines
- Substandard Equipment
- Lack of Capital
- Investments Risk
- Unstable Macroeconomic Environment
- Lack of Statistics and Empirical Evidence on relevance of Mechanisation for Policy Making
- Inadequate machines, spares and facilities
- High Cost of Maintenance & Equipment Hire
- Old Antiquated Technology
- Technical Skills and Knowhow limits
- Seasonality of operations – Idle Capacity

Key opportunities for Mechanization in Zimbabwe

- National Policy & Strategy Formulation
- Value Chain Diagnostic studies – the business case for value chain players & Increased Investments
- Investments in R&D & Technology Transfer – 5 prototypes for commercialisation in 2022
- ZWS- Equipment Standards Development – National Quality Standards Framework
- Agricultural Energy Efficiency & Energy efficient Mechanisation
- Climate Smart Agricultural Mechanisation Technologies
- New Model Development for Alliances and Investment Partnerships
- Big Data & Informatics Centre
- Development of interactive web tool for National Mechanisation
- New Training Curriculum Development
- Code of practice for Manufacturers and suppliers of Mechanisation Equipment
- Industry Cluster / Community Centres
- Rural employment – downstream benefits for mechanisation
- Community processing centres – improved livelihoods

Ongoing mechanization actions/programs

Name	Funding	Value (USD)	Number of Equipment	Progress
1. More Food Programme (Targeting group schemes)	Govt. of Brazil (Loan to GoZ)	**98.6 million** (divided into 3 tranches: 1st: USD38.6 million 2nd: USD30 million 3rd: USD30 million	1st tranche implemented & unlocked 476 tractors and an assortment of related implements	307 schemes benefited having 24,034 farmers with 56,121ha capacitated
2. John Deere Facility	John Deere Finance (Loan to GoZ)	**51 million** (divided into 2 phases: 1st : USD20 million 2nd: USD31 million)	1300 tractors , 80 combine harvesters and an assortment of related implements	1st phase under implementation
3. Belarus Facility	Govt. of Belarus	**103 million** (divided into 2 phases: 1st: USD51 million 2nd: USD52 million)	1811 tractors, 76 combine harvesters, 210 planters, 5 lowbed trucks and 5 disc harrows	1st equipment distributed and now implementing 2nd phase.
4. Private Facilities	Bain /BancABC Zimplow/Ecobank Pipeline Projects	**63 million** **45 million** **225 million**	750 Tractors 600 Tractors 3800 Tractors, 100 Combines	Set for roll out 2nd half of the year 2022
5. Smallholder mechanisation	GoZ	**5 million**	600 two-wheel tractors and an assortment of implements	Procurement in progress
6. Grain Dryers	GoZ	**5 million**	20 mobile grain dryers	20 dryers procured and being operationalised

Type of Equipment	National Requirement	Current National Status	Facility Target for 2022					% Contribution to National Requirement	National Status by Dec. 202
			Smallholder Mechanisation	Belarus Phase 2	John Deere	BancABC - William Bain	Total		
1. Tractors	40,000	7,895	600	1337	440	750	**3127**	8	11,022
2. Combine Harvesters	600	176	0	16	40	0	**56**	9	232
3. Planters	20,000	1,036	600	0	200	300	**1100**	6	2,136
4. Threshers	150,000	Unknown	600	-	-	-	600	?	?

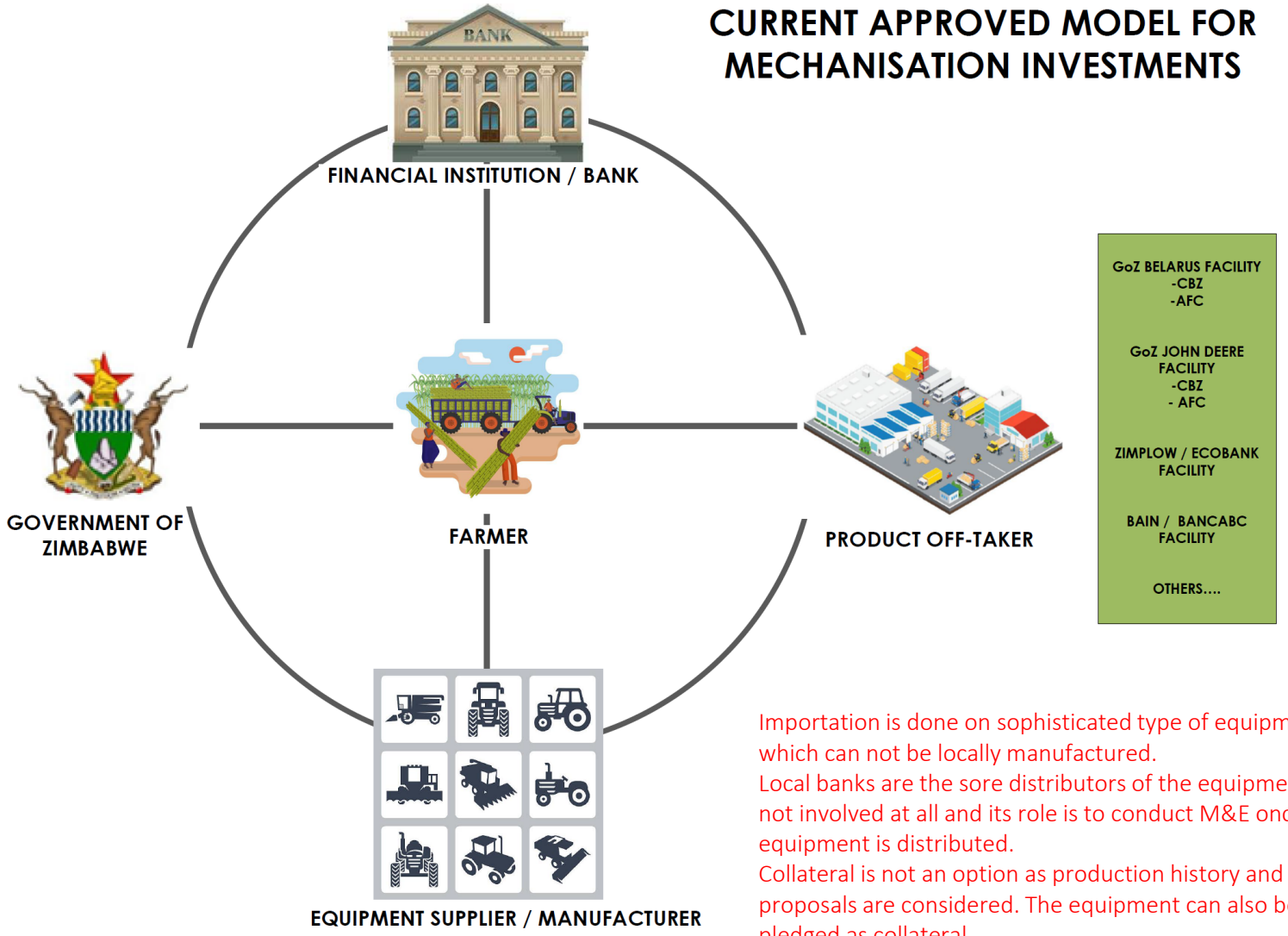
FARM POWER & MACHINERY

FARM STRUCTURES

POSTHARVEST PROCESSING

Planned Future Actions/Activities – AMDA FRAMEWORK

- Short term
  - Policy & Strategy
  - Standards
  - Mechanisation and robotics
  - Imports & 2nd Generation engineering
- Medium term
  - Local Manufacture
  - Automation & Robotics
  - IoT & IR4 Technologies
- Long term
  - Autonomous Systems
  - Integrated Value Chain



Importation is done on sophisticated type of equipment which can not be locally manufactured.
Local banks are the sore distributors of the equipment. GoZ is not involved at all and its role is to conduct M&E once equipment is distributed.
Collateral is not an option as production history and viable proposals are considered. The equipment can also be pledged as collateral.

Conclusion

- Mechanisation plays a pivotal role in Zimbabwe's growth and recovery path based on 2030 Agenda
- Zimbabwe's economy is agro-based and **mechanisation** should play a critical role in the competitiveness and productivity of the nation
- The nation needs a dedicated policy and blueprint to support mechanisation efforts
- The aim is to adopt a value chain approach to grow the mechanisation portfolio and associated value chain actors
- Global Best Practices – Country must upscale to IR4 Technologies and regional and global alliances are key in this journey.

Thank you for your attention!