Kielder Tanzania Ltd – Katavi farm
BUSINESS PLAN
For
Tanzania Investment Centre (TIC)

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1.1. Kielder Tanzania ltd. - Katavi Farm

Kielder Agro Group ASA will be operating in Tanzania under a new company **Kielder Tanzania ltd.**

Kielder Tanzania ltd. has made a Joint Venture agreement with a Tanzanian seed company **SeedLand ltd.** for the development of 1 800 Ha. irrigated seed production on a 3 880 Ha. farm in Western Tanzania. The farm is in located in Luhafwe village, Tanganyika District, Katavi Region. Located 55 km North of Mpanda along the main tar road from Mpanda to Kigoma. The Eastern Boundary of the farm is the main Mpanda - Kigoma road giving the farm great access to the rest of Tanzania, regional and international export markets.

This Mpanda/Kigoma road is an important connection between Rwanda, Burundi and East DRC and Dar es Salaam deep sea port.

The farm in Katavi is unique in the way that it has the ideal climate for production of rainfed seed maize with reliable summer rainfall of 800 – 1 200 mm annually from November to April.

3 continues flow rivers passing through the farm and access to an elevated fourth stream in the forest reserve has been granted for the development of gravity irrigation.

The total license of 25 million m3 irrigation water per year from the various rivers should be sufficient to irrigate more than 1 000 mm over 1 800 ha during the dry months May till October. The easy access to ample irrigation water together with the medium elevation of 1 200 meter above sea level makes this farm an ideal opportunity to develop into irrigated seed production. The relatively mild winter climate allows for a double cropping cycle per irrigated pivot.

Fig 1. Farm boundaries

1.2. Total Farm area

The farm consists of 2 titles:

Title 3174 KTV, plot 1 Block B total	2 105.08 Ha
Title 3175 KTV, plot 2 Block B total	1 780.37 Ha.
Total farm area:	3 885.45 Ha.

Western boundary is a straight line of about 9 km with National Forest reserve
Northern boundary is a straight line of 3.4 km with Luhafwe village land
Eastern boundary is following the main road Mpanda – Kigoma for 7.8 Km
Southern boundary is following the main river Mlawezi for about 9.2 KM

1.3. Main Focus of operations

Tanzania is a country with more than 12 000 000 small holder farmers, almost all Tanzania families are engaged in agriculture one way or the other. The main bottleneck for growth and efficiency in the agriculture food cropping sector is lack of quality planting seed for the approximately 12 M small holder farmers.
The main staple food is maize, Tanzanian farmers require about 120 000 Mt. maize seed but currently only about 30 000 Mt. planting seed is available partly through importation and local production.
The country has a big problem with local production of vegetable oils, currently about 600 000 Mt. vegetable oil is being imported from Malaysia. This is costing Tanzania more than US$ 600 000 000.- annually in foreign currency. There is a strong focus by the Ministry of Agriculture for the country to become self-sufficient in vegetable oil over the next 5 – 10 years.
The bottleneck for Tanzanian farmers to produce enough sunflower for oil crushing is availability of improved (hybrid) planting seed.
The annual requirement for sunflower seed is about 5 000 Mt. Currently there is no local production of hybrid planting seed and the government and other private companies have been importing about 1 000 Mt. annually to support farmers with this shortage of sunflower planting seed.
With the proposed investment in the Katavi farm, Kielder Tanzania ltd. will be working towards reducing the shortage of planting seed for both maize and sunflower for farmers in Tanzania.
Kielder Tanzania ltd. is assured of a good off-take for both seed maize, sunflower seed and bean seeds. The focus will be to produce these seed crops in a sustainable way, with limited soil cultivation, crop rotation with irrigated pasture, strip-tillage with inoculated biochar and use of sunnhemp for soil cover

2. Agriculture production

2.1. Crops and Land allocation

Kielder Tanzania ltd will establish a crop rotation with soybeans, beans, sunflower seed, seed maize, sunnhemp (green manure) and pasture on 1 800 ha. irrigated pivots, half of the pivots to be planted 2 seed crops a year and half of the pivots to be planted one irrigated seed crop with soybeans or green manure in the rainy season.
From the total 3 880 Ha. land available, Kielder Tanzania ltd. is going to select the best land to develop 1 800 ha pivot irrigation over 3 – 5 years. The mild winter in

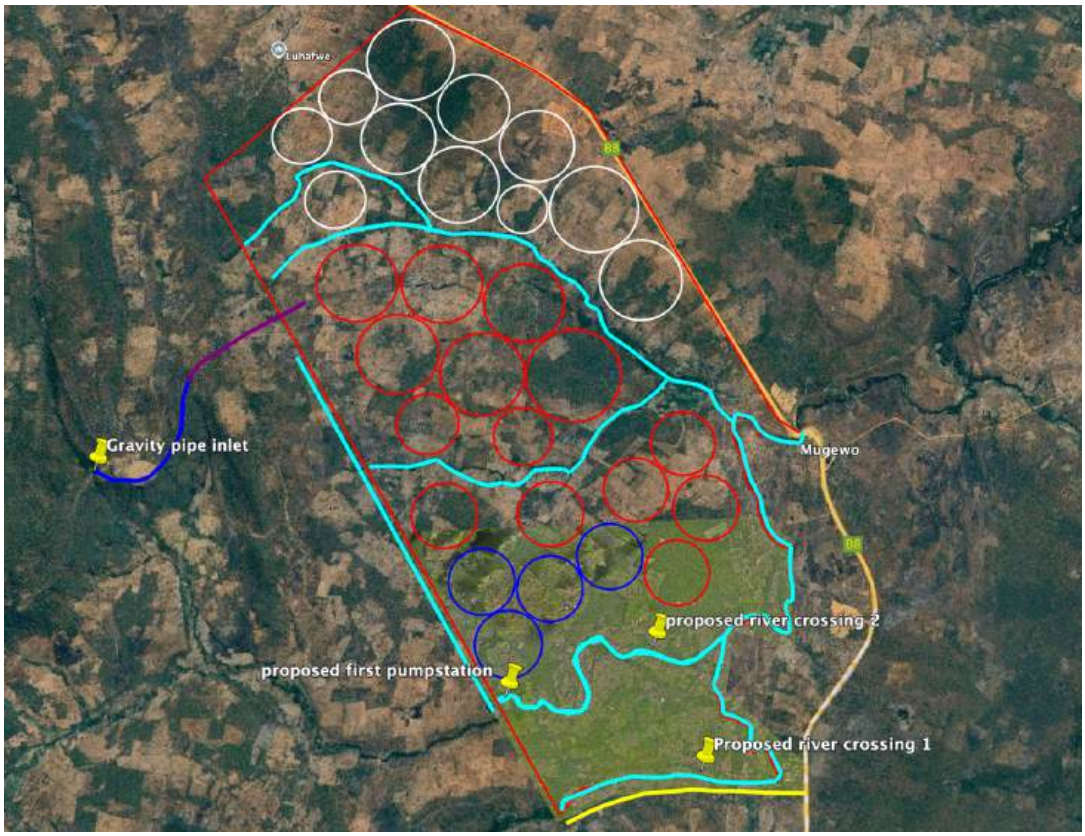
Katavi allows us to year round utilize the pivots to establish a 3 600 ha. double cropping program.
There will be 2 cycles on the pivots, from November till March – rainfed cycle, from April till October the irrigated cycle.
During the rainfed cycle (November till March) it is most suited to produce seed maize, sunnhemp and soybean seed and during the irrigated cycle it is best to produce irrigated sunflower seed and bean seed.

- Party irrigated hybrid seed maize 1 200 ha. expected output 7 000 Mt.
- Irrigated sunflower hybrid seed 800 ha. expected output 800 Mt.
- Irrigated Bean seeds 800 ha. expected output 1 200 Mt.
- Rainfed soybean seed production 300 Ha. expected output 750 Mt.
- Sunnhemp green manure 400 Ha.
- Rotational irrigate pasture for high density grazing 100 Ha.

The remaining approximately 2 000 ha. of land available will be used for rainfed grazing in combination with natural forest/timber production and beekeeping

2.2. Total blocks and number of pivots for irrigation

Fig 2. See below proposed outlay of pivot irrigation on the farm with in light blue marking the rivers, in dark blue the first proposed 200 ha. pivots, in red the 2nd proposed 900 ha. gravity fed pivots and in white the last development of 700 ha. pivots; total expanding into 1 800 ha. irrigated pivots.



Within the first 18 months of operation, Kielder Tanzania ltd. will focus on bringing land into cultivation and establishing the first 4 x 50 ha pivot irrigation as indicated in

dark blue circles on below map. This first 200 ha. of pivot irrigation will be cultivated as per proposed double cropping model of seed maize and soybean during the summer rains (November – March) and irrigated sunflower and bean seed during the dry winter (April – October). At the same time Kielder Tanzania ltd. will be developing more land into cultivation to expand on rainfed seed maize and soybean seed production during the summer rains.
With the first irrigated 200 ha. showing a successful return on the double cropping model a further proposed expansion plan of an additional 900 ha. pivots (red circles) can be established through gravity fed irrigation from the higher elevated FINKA stream.

2.3. Details to water access

The farm has been granted a total of 25 Million M3 water rights; 15 Million M3 water permit from the Mlawezi river which is a composition of the 3 rivers on the farm. See also fig 2 with the proposed pump station at the most West side of the farm to minimize the required head from the river. The first 200 ha. pivots will be irrigated direct from the river with 2 pumps with a head of 68 and 78 meter.
15 M. M3 water is sufficient to irrigate 1 150 ha. at 1 300 mm. The quality of the water has been tested and has been found suitable for irrigation purpose.

Fig 3; contributary of Mlawezi River

The farm has also been granted a 10 Million M3 water permit from the elevated Finka stream. The Finka stream has a measured flow of 550 ltr. per second from

December to August and from September to November this flow reduces to about flow of 200 ltr. per second at its lowest. The quality of the water from the FINKA stream has tested and has been confirmed suitable for irrigation purpose

For the second phase of irrigation development, Kielder Tanzania ltd. will be developing a
1 000 000 m3 storage dam at the elevated FINKA stream with a 3 km gravity feed pipeline to the farm to supply 900 ha. of pivot irrigation with gravity feed irrigation. The calculated head of from the proposed river dam to the highest point of the farm is 92 Meter water will be arriving at the highest point on the farm with a pressure of 9 bar.

Fig 4; Intake point for proposed dam site Finka stream in full flow @ 550 ltr. per second

The residual pressure head from the Finka gravity supply pipe can be utilised for hydro-power generation. The pressure head has to be dissipated in some manner as it is too high for the irrigation system which only requires 35 m head at the pivot plus pipe conveyance losses. If the surplus head is not dissipated by hydro-power generation then one or more inline pressure reducing valves would have to be installed or a break- pressure tank built which could be integrated with a small reservoir. It is estimated that about 220 Kv can be generated with an inline hydro power plant from the 400 ltr/second flow with 9 bar pressure
The technology for inline hydro-power generation is well-proven and one such manufacturer is Canyon Hydro, USA, (www.canyonhydro.com) illustrated in Figure 5.

Fig 5; sample of inline hydro powerplant

2.4. Information on irrigation systems

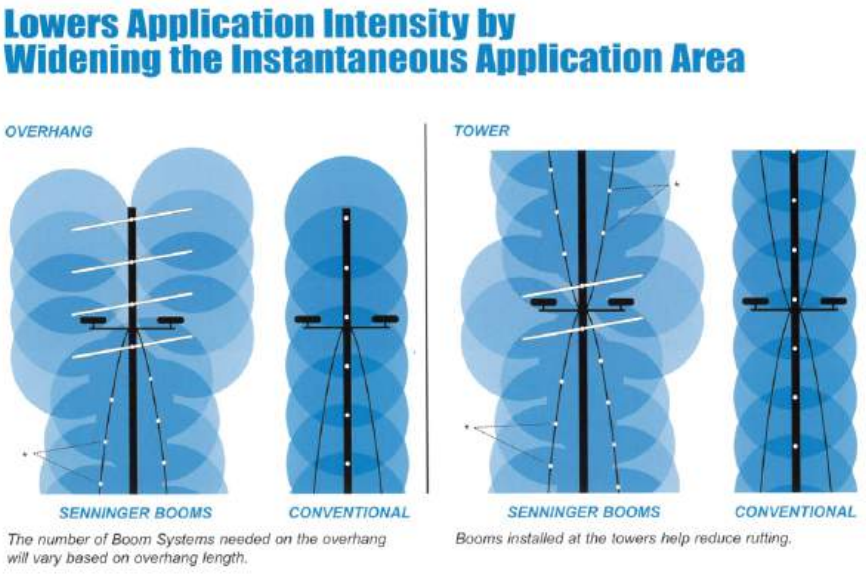
Kielder Tanzania will be opting to install T-L pivots; T-L pivots are on a constant hydraulic driven power system that will reduce long time maintenance issues compared to the electric “Stop Start” power driven systems. For the first 200 ha. Kielder Tanzania is opting for 4 x 50 ha. movable pivots.
50 ha. is the biggest option for a movable pivot, larger seize stationary pivots will imply larger amounts of water volume per second on the outer sections of the pivot. Higher volumes on the outer sections of the pivots is more likely to cause runoff and wheel track erosion.
With the planned supplemental irrigated winter production of sunflower seed and beans, movable pivots can be shifted between 2 circles and still be able to provide enough irrigation during the relatively cooler winter months of low evaporation. Movable pivots requires less investment than larger stationary pivots.

Fig 6: T-L Hydro Powered pivots

Kielder will be opting to install the T-L pivots through a local supplier, and T-L pivots is currently one of the largest provider of pivots in Tanzania
T-L pivots also can supply hydro powered pivots. these pivots would than require not

further electricity connection neither underground electrical cabling other than DC battery power for the electronic operating system. Electrical faulting is more than 50% of trouble shooting with pivot systems.
With the planned future development of the gravity pipe from the elevated Finka stream, Kielder Tanzania ltd. will be able to install and operate these hydro-powered pivots from T-L
To reduce any potential runoff or wheel ruts erosion, Kielder Tanzania will be opting to use Senninger booms at the wheel tracks and overhangs on the TL pivots.

Fig 7: Senniger booms reduce water impact erosion

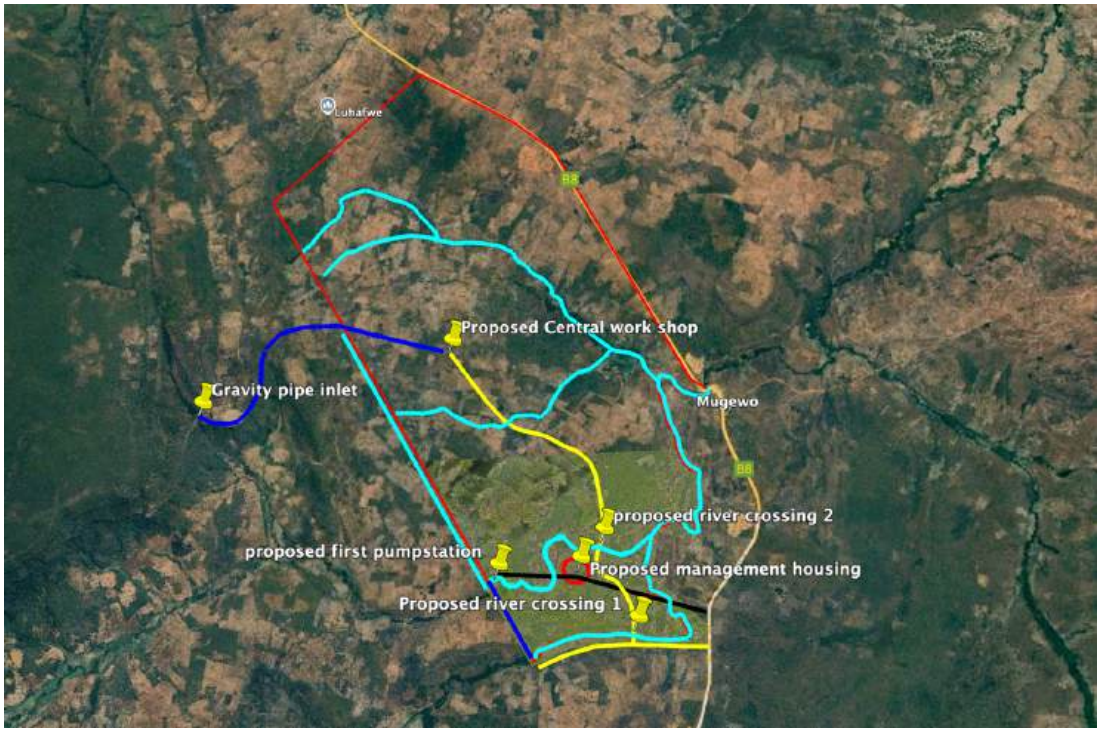


2.5. Infrastructure details

Roads and storm drains

There are various water sources and water ways on the farm but we can also expect storm water coming down the mountain west of the farm. On the western side of the farm a storm drain will be developed in order to protect the farm from potential storm water erosion.
First stage to be development of a boundary road around the west and northern side of the property, total length of this road is 11 km
On the South boundary we have been given an access road by the government to build a bridge across one of the Mlawezi rivers for easy access to the farm coming from Mpanda.
The approx. 300 ha. island between the 2 main rivers can be accessed via 2 bridges and secured on the Western boundary with a game fence.

Fig 6: proposed farm infrastructure layout



For the development of central stores and workshop area we will be taking in consideration future side of the gravity pipe entering on the farm for further water disbursement point with fertigation, hydro power generator, production of liquid nitrogen, cob drying/seed processing activities and workshop/tractor stores with centralized access to farm blocks and Mpanda/Kigoma main road.

Seed and fertilizer store
Phase 1 is building a Seed & Fertilizer store with 500 M2 space for putting up a Seed processing/packing facility.
Phase 2 Cob drying area to be developed from 2026
Efficient cob drying is going to be important for the long term profitability of the project, with more pivot irrigation available we can plant the seed maize earlier in August/September, planting seed maize in August/September will generally result in higher yields. When we are able to harvest the seed maize at physiological ripe (35% moisture) and using cob dryers to dry down to 12% will be beneficial for both quality and yield. Most of yield and quality losses with seed maize happen after physiological maturity. We have requested Booker Tate consultants to advise on the development of the most efficient ways of cob drying
Phase 3 See below capacity requirement for cob dryer, with the additional pivots in 2028 will also need to expand on storage and cob drying capacity.

Fig 7: Required storage capacity for harvested seed:

Seed storage requirement in M2	2026		2027		2028	
	1st half	2nd half	1st half	2nd half	1st half	2nd half
sunnhemp			240		240	
seed maize	600		1,665		2,700	
soy beans			185		570	
sunflower		52		56		270
beans		156		180		775
Total crop storage (MT)	600	208	2,090	236	3,510	1,045
Storage Floor space requirement @ 2MT/M2	300	104	1,045	118	1,755	523

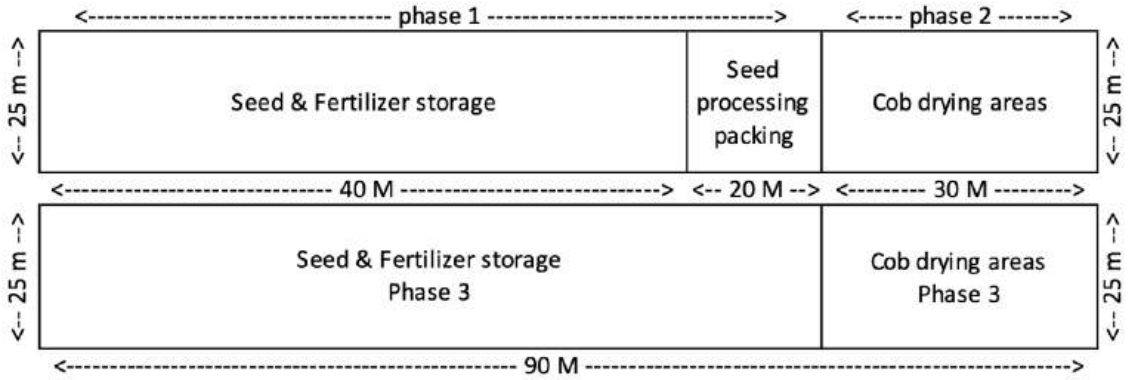
Until 2nd half 2027 seed storage requirement of 10 45 m2 should be sufficient.

Fig 8: Drying capacity requirement

Drying capacity	2027	2028	2029	2030	2031
Seed maize planted pivot area	200	200	800	1,200	1,200
seed maize harvest on pivots (MT)	1,000	1,000	4,000	6,000	6,000
Days to clear pivots	60	60	60	60	60
Min Harvested Ha per day	3	3	13	20	20
Harvest in MT per day	17	17	67	100	100
Total Drying days	6	6	6	6	6
Drying storage capacity	100	100	400	600	600
Drying input/output capacity per day (MT)	**20**	**20**	**80**	**120**	**120**

For a seed cleaning set up about 500 m2 and 9 meter high for elevators will be required, total for phase one required 1 545 m2.

Fig 9: proposed warehouse layouts



Part of the secured 300 ha. area between the 2 rivers will be used for the development management housing. Kielder Tanzania ltd. will be developing an economic open spaced dining and living area with 6 – 8 little self-contained one bedroom houses around this main building.

2.6. Green Lighting liquid Nitrogen production

With potential excess of electrical power produced by the hydro power station after the installation of the water gravity pipeline, Kielder Tanzania will also be looking into producing liquid Nitrogen on-farm.

Liquid Nitrogen can be applied through the pivots. With the almost free power from the hydropower plant we will be able to produce liquid Nitrogen much cheaper compared with the purchase of granule nitrogen. The use of liquid nitrogen through pivots will also reduce the use of salt based granule fertilizer that has a potentially negative effect on long term soil health.

Small seize “on-farm” liquid nitrogen production plants as above picture are now available in the US and Kielder Tanzania to do more research into the operation of these plants and the advantages of using liquid nitrogen on remote locations through pivot application.

3. Community & Workforce impact

3.1. Number of people to be employed

Kielder Tanzania will start off with a relatively small workforce, the initial land clearing will be done through contract operators but the final land preparation will be done with own equipment Expecting to start with 8 Permanent staff, 10 casual workers to support bush clearing (chainsaw and moving branches) and about 6 staff for general farm security

The planned seed production for maize requires a lot of hand labor for crop selection, de-tasseling and processing we expect to be working with an additional 40 seasonal workers for hand labor in the maize seed production in the first year and expanding to up to 200 seasonal workers for hand labor at full scale seed production

3.2. Details on equipment and advances solutions

Kielder Tanzania will be purchasing one bulldozer John Deere 850, this is locally available and is a good bulldozer for both bush clearing operations and agriculture work with hydraulic drive gearbox to avoid overheating gearboxes on long runs compare with conventional geared bulldozers.

Fig 10; John Deere 850 bulldozer

https://www.deere.africa/assets/pdfs/common/products/dozers/crawler-dozers-j-series-ii-dkajiiudzr-rowen.pdf
Idea is that after the initial land clearing we will be a BLADE PLOUGH and a BUSH RAKE for pulling behind the bulldozer to take out all remaining root material from the land to be brought into cultivation.

Fig 11 Erdvark BLADE PLOUGH behind dozer

https://www.youtube.com/watch?v=SdHw6YTMOr4

We will be planning to use a wood chipper to chip up all remaining branches, roots and stumps.
The natural breakdown of these wood chips will help the soils with added K and other trace elements. For chipping or shrubs and stumps we are planning to purchase a self-drive WUHLF MULCHER
https://youtu.be/w2WNPTZyvnw

For the farm tractors we will be opting to use CASE tractors, CASE has a good team of technicians in Tanzania and provide tractor service on the farm. CASE is also

opening a new service point in Kasulu about 200 km North of Mpanda near a new Sugar Estate. For stripping, liming and planting we find a CASE PUMA 220 with RTK most suitable. For spraying, fertilizing and trailer work 2 x 90 HP CASE tractors will be enough capacity for the first 2 years. The CASE PUMA 220 can come with dual tires to limit any potential compaction in wet conditions.

Fig 12 CASE PUMA 220

A precision planter is the most precious equipment in seed production. We are opting for an 8-row Monosem precision planter. The reliability and precision of this Monosem planter has proven to be one of the best precision planters in the market. For maize and sunflower hybrid seed production it is crucial to obtain precise seed distance placing as well as precise seed debt placing in the soil to obtain equal seed emerge in order to maximize on pollination and yield.
The Monosem precision planter comes in minimum-till configuration and can be used in direct seeding as well as planting on top of previous fertilized strips with strip tiller.
For seed maize and sunflower seed will need to have a planting capacity of about 50 - 100 ha. per week to keep time separation for de-tasseling and bee pollination.
The 8 row planter has a capacity of planting of about 4 ha per hour or about 40 – 50 ha per full day planting. With this one planter we expect to have enough capacity until 2028 Q1.

Fig 13. Monosem precision planter on NAMPO agriculture show in South Africa

3.3. Soil regeneration and any other environmental protection

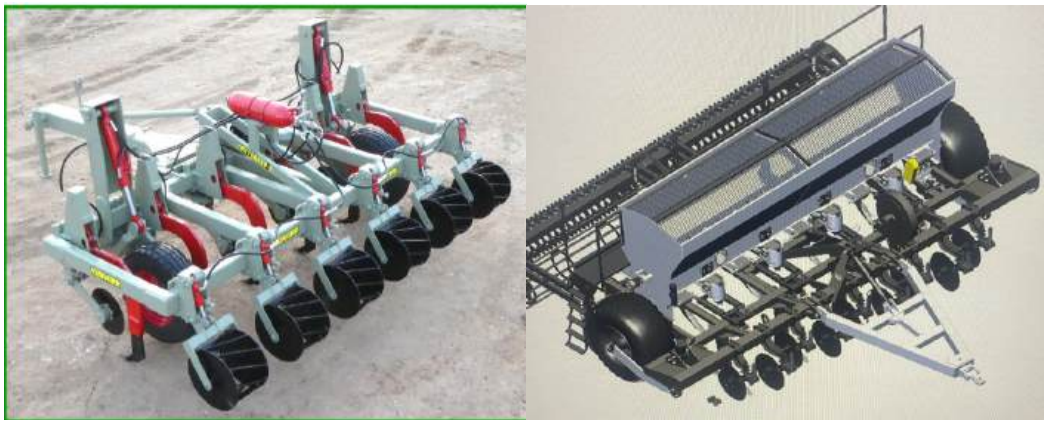
After initial bush clearing and running blade plough we will be planting sunnhemp as first crop on the cleared land. Sunnhemp is a good cover crop in the tropics producing up to 60 units of N per ha. to support breaking down remaining root material, wood chips and activating soils microbes.
The first few years sunnhemp will be planted and rolled off without harvesting the seeds. The rolled down sunnhemp will create a firm mat over the soil to protect top soil from erosion and protect soil biology from potential drying out and overheating
For further improving soil biology we will be using a strip tiller to apply inoculated biochar in the fields with the rolled sunnhemp. We will have enough biochar available from farm clearing operations and we can purchase chicken manure and other micronutrients to inoculate this farm biochar
Quote from study: **"Effects of tillage and biochar on soil physiochemical and microbial properties and its linkage with crop yield "** Bacterial diversity increases the microbial activities and the soil fertility, which were important for nutrient cycling and improving the plant health. Thus, the soil physicochemical properties and bacteria had a significant effect on the crop yield. Meanwhile, deep tillage combined with biochar indirectly increased crop yield by improving soil physicochemical properties and altering the bacterial community.
https://pmc.ncbi.nlm.nih.gov/articles/PMC9530144/#B18

Fig 14: rolling sunnhemp to improve on soil biology

https://www.instagram.com/riverqueengreens/p/CxMDjYHLVRU/?img_index=1

After rolling sunnhemp we will be incorporating inoculated biochar with chicken manure together and other additives like zinc sulphate and (dolomitic/acidic) lime. A Brazilian company **INRODA** has developed a machine to apply lime and biochar in strips, the applicator has a belt system feeding behind the tines up to 3 Mt. product per Ha. This is a very efficient way of stimulating soil biology in strips and moving these improved strips sideways over the blocks annually, with the CASE ARK system we can than plant exactly on top of these improved strips.
"The application of biochar or chicken manure alone or in combination, all improved maize growth, antioxidant enzymatic activities and soil enzymatic activities under Pb stress"
https://pmc.ncbi.nlm.nih.gov/articles/PMC8280880/

Fig 15: lime and biochar stip tillers from South Africa and Brazil



The other important strategy for developing sustainable soil health on the farm is to involve animal husbandry and provide rotational irrigated pastures for high density grazing. Kielder Tanzania will be working initially with 3rd party livestock operators to improve soil biology with cattle, sheep and possible chickens. Once the concept of rotational grazing with crop production has been refined, Kielder Tanzania could also engage with own livestock production. The farm could offer services for dairy heifers, sheep and goat livestock exporters and possible large scale chicken production operators.

The concept of improving poor miombo forest soils with livestock has been refined by Rex and Jenny Fey, who were able to get great improvements on organic matter contents through high density grazing on irrigated pasture. We will be cooperating closely on pasture management with Rex and Jenny Fey who are running an efficient dairy operation just West of Iringa Town

3.4. Community programs linked to Kielder Tanzania ltd.

Kielder Tanzania ltd. will be using a 10 – 15 Mt. of sunnhemp seed per year for soil protection and soil regeneration. The sunnhemp seed will be purchased from SeedLand small holder producers in Central Tanzania where the climate is suitable to

produce sunnhemp seed profitable. SeedLand ltd. is entering a project with AGRA supporting more than 25 000 young farmers to introduce them to contracted sunnhemp seed production and on that basis providing credit access to improved sunflower and maize seed. It has been found that production of sunnhemp seed in Central Tanzania bringing economic benefits to small holders and at the same time this sunnhemp seed production will help farmers with improving soil health. SeedLand has been part of research into the soil health benefits of small holders using sunnhemp in crop rotation since 2021.

Fig 16: research findings change in soil properties due to Sunnhemp crop rotation with small holders in Tanzania

BLOCK	TREATMENTS	pH	Carbon (%)	Carbon (%) Nov. 2022	Carbon difference from base line(%)	Carbon difference in Mt/ha
1	SITE 1 BLOCK 1(before planting trials)	7.02	0.47		baseline 0.47%	% x 10 x 2.24 =Mt/ha
	T1(Sole sunflower without fertilizer)	6.74	0.32	0.31	-0.15	-3.36
	T2(1:1 Sunn hemp+sunflower) no fertilizer	6.46	0.61	0.70	0.14	3.14
	T3(1:1, Sunn hemp + sunflower) with fertilizers	7.02	0.59	0.65	0.12	2.69
	T4(2:1 Sunn hemp + Sunflower) no fertilizer	7.39	0.45	0.78	-0.02	-0.45
	T5(2:1 Sunn hemp + sunflower) with fertilizer	7.17	0.47	0.56	0.00	0.00
	T6(Sunflower with fertilizer)	7.11	0.4	0.70	-0.07	-1.57
	T7 (Harvested sunn hemp)	7.04	0.65	0.50	0.18	4.03
	T8 (Slashed sunn hemp)	7.36	0.62	0.65	0.15	3.36
2	SITE 1 BLOCK 2(before planting trials)	7.14	0.42		baseline 0.42%	% x 10 x 2.24 =Mt/ha
	T1(Sole sunflower without fertilizer)	7.2	0.34	0.51	-0.08	-1.79
	T2(1:1 Sunn hemp+sunflower) no fertilizer	8.06	0.52	0.57	0.10	2.24
	T3(1:1, Sunn hemp + sunflower) with fertilizers	7.22	0.57	0.31	0.15	3.36
	T4(2:1 Sunn hemp + Sunflower) no fertilizer	7.13	0.49	0.45	0.07	1.57
	T5(2:1 Sunn hemp + sunflower) with fertilizer	7.06	0.44	0.50	0.02	0.45
	T6(Sunflower with fertilizer)	7.42	0.41	0.62	-0.01	-0.22
	T7 (Harvested sunn hemp)	7.24	0.52	0.88	0.10	2.24
	T8 (Slashed sunn hemp)	7.31	0.57	0.92	0.15	3.36
3	SITE 1 BLOCK 3(before planting trials)	7.15	0.68		baseline 0.68%	% x 10 x 2.24 =Mt/ha
	T1(Sole sunflower without fertilizer)	7.06	0.48	0.57	-0.20	-4.48
	T2(1:1 Sunn hemp+sunflower) no fertilizer	7.74	0.69	0.64	0.01	0.22
	T3(1:1, Sunn hemp + sunflower) with fertilizers	7.17	0.76	0.62	0.08	1.79
	T4(2:1 Sunn hemp + Sunflower) no fertilizer	7.55	0.62	0.44	-0.06	-1.34
	T5(2:1 Sunn hemp + sunflower) with fertilizer	7.39	0.65	0.44	-0.03	-0.67
	T6(Sunflower with fertilizer)	7.29	0.47	0.54	-0.21	-4.70
	T7 (Harvested sunn hemp)	7.32	0.79	0.50	0.11	2.46
	T8 (Slashed sunn hemp)	7.53	0.75	0.66	0.07	1.57

4. Looking Ahead – future expansion

Kielder Tanzania ltd. in close cooperation with Kielder Agro Group SA and SeedLand ltd will be developing the 4 000 Ha. farm in Katavi into a hub of show casing and developing re-generative practices integrating modern technologies like drone mapping, remote sensing, RTK strip tillage, using combine yield monitoring for soil mapping together with biology driven seed/crop production using strip-tillage, soil cover, crop rotation and irrigated pastures.

Beside development of the farm, Kielder Tanzania ltd. will also have opportunities cooperating with farmers in Katavi for the production and processing of soybeans for both human consumption and animal feed.

Once the concept and numbers of integrating livestock with the seed production have become more clear, Kielder Tanzania ltd. can also engage in owning livestock for the purpose of improved beef and dairy production.

5. Kielder Tanzania ltd. development impact

5.1. Total seed production resulting in additional food security in Tanzania

Expected outputs of seed for food crops in Tanzania:

Hybrid seed maize expected output 7 000 Mt., producing enough seed for 280 000 Ha., with an average additional production potential for use of hybrid seed compared with farmers home saved seed of 1 Mt. per ha an additional 280 000 Mt. of maize will be added to the food security in Tanzania

Sunflower hybrid seed expected output 800 Mt. producing enough seed for 160 000 ha. Sunflower production. With an average additional production of 250 kgs vegetable oil per ha. for farmers using hybrid seed, an additional 40 000 Mt. vegetable oil will be added to the food security in Tanzania; vegetable oil that otherwise needed to be imported burdening the country with using US$ 40 M. in foreign exchange.

Kielder Tanzani ltd. "show case scenario" for most farmers seeing is the only way into believing. It often takes a lot convincing to change traditional concepts of food production into more efficient and sustainable concepts. With the traditional slash and burn practice of crop production no attention to soil conservation was needed as the farmers are intending to leave the farm as soon as the yields drop below acceptable levels and start opening the next block of forest. This practice has been working for many years in the past but now with increase population there is not enough idle land available anymore and farmers will now have to understand how to conserve already opened farm land so that it can be used even for generations.

5.2. Regenerative Impact on soil and water conservation

For further exploration of future soil and water conservation, Kielder Tanzania will be looking into the possibilities of developing a dual-purpose system of underground tubing that can be used for both subsurface drainage in the wet season and subirrigation in the dry season.

If Kielder Tanzania ltd. is able to develop a financial feasible system on small scale than this potential dual-purpose system of underground irrigation could potentially reduce the amount of pivots needed for production in the dry season and increase production levels during the rainy season. The total water usage with subsurface irrigation will be more efficient than irrigation through overhead center pivots.

6. Operational Plan

6.1. Crop Calender

Kielder Tanzania is planning to start the project in January 2026 with building up infrastructure and land clearing. From November 2026 an integrated crop rotation with seed maize, beans seed, sunflower seed, sunnhemp and soybeans will be developed into a total of 1800 ha. irrigated seed crops

	2026 Q4	2027 Q1	2027 Q2	2027 Q3	2027 Q4	2028 Q1	2028 Q2	2028 Q3	2028 Q4	2029 Q1	2029 Q2	2029 Q3
Crop calender												
Sunhemp seed - rainfed		300	300			300	300			300	300	
Seed maize - rainfed/irrigated	240	240			450	450			600	600		
Soybeans - rainfed						200	200			300	300	
Total rainfed Katavi farm	240	540	300	0	450	950	500	0	600	1200	600	0
pasture - irrigated											100	100
Sunflower seeds			100	100			200	200			400	400
Bean seeds irrigated			100	100			200	200			650	650
Total irrigated Katavi farm	0	0	200	200	0	0	400	400	0	0	1,150	1,150
Total Katavi production	**240**	**540**	**500**	**200**	**450**	**950**	**900**	**400**	**600**	**1,200**	**1,750**	**1,150**

6.2. Capex investment in first 18 Months

Kielder Tanzania ltd. will be focusing on clearing 550 Ha. in the first 18 months starting from January 2026 and developing 200 Ha. into 4 x 50 Ha. pivot irrigation. A total of approx. US$ 3 000 000.- will be allocated for investment in CAPEX in the first 18 months. The further planned expansion of investment in land clearing and pivot irrigation will be “fine-tuned” on the productivity numbers of the first 550 Ha. seed production

Investment Timeline			18 Month disbursement					
	depr.%		2026 Q1	2026 Q2	2026 Q3	2026 Q4	2027 Q1	2027 Q2
Charges for land clearing @ $ 708/ha	0%		28,300	191,160	191,160	0	28,300	0
First cut chissel plough & harrow leveling	0%		6,000	25,400	25,400	44,800		0
Casual labor clearing land	0%		3,600	6,000	6,600	3,690	4,500	0
Estimated Cleared Ha per quarter				220	260	60	0	0
Accumulative Ha cleared				220	480	540	540	0
ESTIMATE HA. CLEARED				**220 Ha**	**480 ha**	**540 ha**	**540 Ha**	**540 Ha**
Lime products/biochar	0%				0	0		
Processing and seed store/cob dryer	8%			110,294		110,294		
Power generators/Gravity pipeline/TANESCO	8%			56,985				
Roads, fence, river obstruction/dam/airstrip	8%		20,110	105,919	30,331	60,662		
Pivots and installation	8%					454,468	200,000	
Bushclearing equipment chipper, chainsaws	20%		25,000	18,500				
Tractors and trailers	20%		139,000		133,000			
Staff and Management Housing	8%		29,412	75,368	45,956			
Workshop, fuel tanks, equipment, tools, generators	20%		79,656	16,000	18,750		36,000	
Motor vehicles/Tipper trucks/TLB backhoe	25%		131,227	67,215				
Ground sprayers/drones	20%				24,500			
planters	20%							
Combine harvester and bean harvester and sheller	20%							
Agricultural equipment	20%		219,872	139,027				
Importation/shipping	20%				35,500	10,500		
Planting pivots with permanent grazing								
Building chicken shets for rental								
Cattle shets								
Power fencing around pivots								
CAPEX KATAVI FARM DEVELOPMENT			682,177	811,868	511,197	684,414	268,800	0
TOTAL CAPEX			682,177	1,494,045	2,005,242	2,689,656	2,958,456	**2,958,456**

6.3. Finance committed to Opex in the first 18 months

In the first 18 months, Kielder Tanzania will be expecting to finance a total of US$ 638 680.- for crop inputs to finance 240 ha. of seed maize production @ US$ 1734.- per Ha. split over 2 quarters, US$ 82 620.- for 300 ha. sunnhemp seed @ US$ 275.- per Ha. production split over 2 quarters and 50% production cost of 100 ha irrigated sunflower seed @ US$ 1 479.- per ha. and 50% production cost of 100 ha irrigated seed beans @ US$ 1 319.- per Ha.
Expected 50% revenue from first seed maize sale of US$ 234 900.- to be received before end of 2027 Q2. Total commitment to Opex finance in first 18 months to be around US$ 400 000.-

		UNIT	2026 Q1	2026 Q2	2026 Q3	2026 Q4	2027 Q1	2027 Q2
KATAVI CROP OPEX	Sunhemp - rainfed		0	0	0	0	41,310	41,310
	Soybeans - rainfed		0	0	0	0	0	0
	Seed maize - rainfed/irrigated		0	0	0	208,080	208,080	0
	Bean seeds - irrigated		0	0	0	0	0	73,950
	Sunflower seeds - irrigated		0	0	0	0	0	65,950
	processing/drying costs - own production			0	0	0	0	0
	Transport/railage and cropcess		0	0	0	0	0	0
	Export and port charges		0	0	0	0	0	0
	packing material			0	0	0	0	0
	KATAVI FARM OPEX FINANCE REQUIREMENT		0	0	0	208,080	249,390	181,210
	REVENUE FROM SALES							234,900
	ACCUMULATED OPEX FINANCE LESS REVENUE					208,080	457,470	403,780

6.4. Finance committed to Overheads in first 18 Months

Kielder Tanzania is aware that strong human recources and strict financial control are needed for a successful development of the project. Approximately 50% of the overheads are committed to a strong management team consisting of an experienced Project manager, CFO and Farm manager.

		UNIT	2026 Q1	2026 Q2	2026 Q3	2026 Q4	2027 Q1	2027 Q2
Overheads	Management costs		45,000	45,000	45,000	45,000	45,000	45,000
	Consultancy		25,162		25,162			
	Fuel for cars, generators, chainsaws ect.		3,150	10,500	12,500	6,750	7,088	7,442
	Permanent staff/watch men		10,500	11,025	11,576	12,155	12,763	13,401
	Insurance		3,714	6,434	7,545	16,980	17,150	17,322
	Travelling		6,000	6,000	6,060	6,121	6,182	6,244
	Oil and Grease, R&M equipment		5,250	5,250	6,500	6,630	6,763	6,898
	Licences and permits		2,500	2,525	2,550	2,576	2,602	2,628
	Admin and office							
	Quarterly Overheads		101,276	86,734	116,894	96,212	97,546	98,933
	Comlative Quarterly Overheads		101,276	188,011	304,905	401,116	498,663	597,596

7. Total Investment planned and Long term Financial Projections

Kielder Tanzania ltd. has committed to deploy US$ 6 500 000.- equity to the project. For the first 18 months a total of US$ 4 000 000.- will be deployed, split into:
US$ 3 000 000.- for CAPEX, US$ 400 000.- for OPEX and US$ 600 000.- to overheads. Based on the project performance of the first 18 – 24 months, further investment will be planned and once the project has become cash positive a possible further US$ 6 000 000.- to be borrowed to scale the project to maximum capacity as per below 10

year projection.
The project will be cash (EBITDA) positive in 2029. With the current projections the project will require a maximum finance of US$ 11 500 000.- to be developed into full scale irrigated seed production. From 2030 the project is planned to become profitable

8 year projections:	EQUITY US$ 6,500,000.- LOANS REQUIREMENT USD 12,000,000 @ 8.5% INTEREST									
	2026	2027	2028	2029	2030	2031	2032	2033	2034	
ANNUAL REVENUE (SEED AND CROPPING)	0	965,300	2,507,625	5,045,938	8,106,038	9,872,075	11,758,725	13,219,500	13,798,500	
COST OF SALES (SEED AND CROP PRODUCTION)	208,080	1,061,027	2,055,655	3,778,304	4,751,164	5,355,266	6,245,912	6,440,181	5,373,709	38.9%
GROSS PROFIT (SEED AND CROP PRODUCTION)	-208,080	-95,727	451,970	1,267,634	3,354,873	4,516,809	5,512,813	6,779,319	8,424,791	61.1%
OVERHEADS	401,116	450,940	528,782	554,073	574,857	603,405	621,199	644,418	669,334	4.9%
EBITDA (SEED AND CROP PRODUCTION)	-609,196	-546,667	-76,811	713,561	2,780,016	3,913,404	4,891,615	6,134,901	7,755,458	56.2%
MAX. FINANCE REQUIREMENT	3,378,095	4,201,434	8,925,598	11,078,996	11,340,318	10,911,687	9,196,351	5,798,679		
INTEREST ON LOANS	0	0	191,250	520,625	522,750	382,500	255,000	63,750	0	
DEPRECIATION	23,465	308,422	541,215	903,780	961,860	1,091,860	1,209,860	1,143,364	1,120,000	
PROFIT/LOSS	-632,661	-855,088	-809,276	-710,845	1,295,405	2,439,044	3,426,754	4,927,787	6,635,458	
TAXES	0	0	0	0	0	0	1,028,026	1,478,336	1,990,637	
NETT PROFIT OPERATIONS	0	0	0	-710,845	1,295,405	2,439,044	2,398,728	3,449,451	4,644,820	
NETT PROFIT ON 55%			0	-390,965	712,473	1,341,474	1,319,300	1,897,198	2,554,651	
YIELD			0.0%	-6.0%	11.0%	20.6%	20.3%	29.2%	39.3%	
COMPANY VALUE 7 X EBITDA	-4,264,375	-3,826,667	-537,680	4,994,924	19,460,111	27,393,831	34,241,303	42,944,305	54,288,203	
MULTIPLIER ON 55% EQUITY	-2,345,406	-2,104,667	-295,724	2,747,208	10,703,061	15,066,607	18,832,716	23,619,368	29,858,512	
CAPITAL GAIN				-3,752,792	4,203,061	8,566,607	12,332,716	17,119,368	23,358,512	
MULTIPLE				0.42	1.65	2.32	2.90	3.63	4.59	
PERFORMANCE				-57.7%	64.7%	131.8%	189.7%	263.4%	359.4%	