



**THINK NAMIBIA**  
Sustainable Forest  
Management

## MBAPIRA YAMAPUKURURO KUHAMENA:

# Litapeko Na Liwederero Vitondo

*Shitambo shashimbapira shinoshaku tapa mapukururo kuhamena wiya waNamibia, Mukonda munke vyakarera mulyo mukutapeka nakuwederera vitondo muNamibia, ntani weni ghuvhura kuruwana proyeka yalitapayiko vitondo, nampili papadidi.*

## LITWARAMO

Shingi sha mawiya muNamibia kwaghu twenyanga ashi wiya wamarukukutu – wiya waku panuka wakaro navitondo vyavididi, ntani pavirugho vimwe mushoni wa ghuyingi. Mukonda, Namibia kwa mudemenena ukaro mpepo wa rukukutu wiya wakupanuka kwakara rumpuhukwa mushirongo. Vyavyo kwashwa kukara kudimuramba dadididi kumarukenkera ghadimukuro ndi kumandi kwara mbindakano damukunda.

Dimukunda dakaro na wiya wa unene muNamibia kwakara Zambezi namaruha shirongo maviri ghaKavango. Ruha shirongo rwaZambezi kwawananga mvhura yakutika ku 600 na 700 mm ntanikwakara kushetekera pa vitondo kutika ku 87 mumutunda umwe. Ano rugha shirongo rwaKavango upumeyuva na utokero kwayura vitondo vyakarero mulivhu lyaKalahari, mwamo kwashwa kuroka kutika ku 500 na 600 mm, lungungunyikiro kwakara mumutunda umwe kuwanamo vitondo vya kutika ku 125 mumutunda umwe. Rudi rwa Vitondokutika ku mudjumo wa persenta 90 mudjumo wa vitondo mu wiya muKavango ntani shingi shavyo kwakara rudi rwambando (vitondo vya ure wakutika kumetera 8 no 15 munaure). Marudi ghavitondo vya mbando kwaviyangwiranga mukonda unene wamutika wavitondo. Vitondo ovyo varuwanitanga vipirangi muNamibia kwakara ughuva (*Pterocarpus angolensis*), kughutwenyankashi Mukwa, Umbila, ndi Muninga.

Mukonda yayinene yalitetauro vitondo muNamibia kwakara likenito mavango nashitamboha unandima. Konda dimwe dalimonayiko lya kehe ruvede rwamundiro mulivhu lyakuhulilira lya vavaka vyarukukutu; uno mundiro waupy wa unene kupitakana shinema shakukuvinduka ku shinema, vyavyo kuguma vitondo vyavinene. Liyanguro lya vitondo kapi lyatwalidiranga kulitetaghuro lyavitondo muNamibia ngoli kuvhura viyititepo lidjonaghuro lya wiya.

## NKEVINAKUTANTA LITAPAYIKO NA LIWEDERERO WIYA?

Litapayiko na liwederero lya vitondo navintje kwakara nashitambo shimwe shakukufana, shitambo shakutapeka vitondo vya viyingi palivango mposhi vavitwenye ashi wiya. Va FAO kufaturura wiya ashi “livhu eliyakaro na mbando yavitondo vyakugwaneka persenta dakupitakana pa 10 palivango lyakutika k u0.5 mumutunda”.

Ngoli pakara likushuvo lya lididi mulitapayiko lyalyo kutantashi kutapeka vitondo opo papiliro kukara vitondo, oku kuna kuwederera vitondo kuna kutantashi kukuna vitondo vyavipe kulivango oku kwakaro kare vitondo.

## NKENANI MULYO WA LITAPAYIKO WIYA?

Mavango ghaWiya muNamibia kunakusheshupa. Momutupu ghuna kukuramuhoko nalikuwederero lya unandima nampumbwe dalirwanita vivipirangi mukudikitako, nalikuwederero lyamaghulitiro gha pandje yashirongo ghakupira likeverero lya vitonda yira, mauhahe (*Baikiaea plurijuga*), maushivi (*Guibourtia coleosperma*), ntani nama ughuva (*Pterocarpus angolensis*) vitondo vyakuhupako vina karo mushiponga shashinene. Kuwedererako likushinto lya ukaro mpepo una kukuwederero kunakara shinka sha shinene muNamibia, namaruhapeke mwayendo udjuni mudima, naukaro mpepo rukukutu na upyu wa unene unakudjonauro ukanguki wa wiya ntani kumaruha ghamwe liyeruko lyaku wederera mulyo wa liruwanito mpepo dadidona.

## MAGHUWAMUNKE GHAKARO MULITAPAYIKO VITONDO?

(NTANI NKEDI DIMWE DAKUWEDERERA KO VITONDO)

- Yayo kutulitapo likuwederero lya runone rwamuwiya, Mukupa vatungimo namboresha, nyango, vikuni narunone nkarumwe oro rwakaromulyo kumaparu gha vantu. Persenta 71 ya vantu vatungo kudimukunda muNamibia kwahuguvara kuparuka runone rwakutundilira muwiya (RRM) mumaparu gha keheliyuva.
- Yayo kukandanapo likonkomoko lya livhu mukonda vitondo kukara mulipopero lyakukandana mpepo, mposhi yisheshupike nkondo dampepo ntani kughurumwita madjonawito ntani na nkondo daku ghupapa ndanda da livhu dadinene. Ndandani da vitondo kurenkita livhu likukwate kumwe, mukurenkera livhu likarepamwe mumaruvede gha ruhandjo.
- Vitondo kuvatera ukanguki walivhu; mahako ghakukukumuka kuyititapo ukorameno wa upe mulivhu, ntjo shiruanito shashiye mukuwapukurura livhu lyapawiru. Mukuwedako, mundwire wavitondo kuvatera kughurumwita upyu wa livhu.
- Wawonka ku ghuruwanita ukarompepo mukonda vitondo kushushupita madjonawito gha mpepo, kusheshupita upyu, mukonda vyavyo mbyo vitendekwa vya mpepo vya ntjitwe mu udjuni. Vitondo kutapa nakuvhukita mema ntani viruwana vimwevya ukarompepo rambangako livyukuruko lya ukaro, litendeko likenito mema, liwapukururo, ntani likuwederero lya mema ghamulivhu.
- Vyavyo kwakara nampito yakukeverera upyu mu udjuni ntani na likushinto lya ukaro wampepo. Vitondo kuyititapo likushinto lya ndjughu ya mundwire kupitira muliparukolya vitondo mukupa nkondo evi vyaruwanango kumpepo yayidona. Munkango dimwe, kuyititapo wiya wa upe kuyititapo liruwanito limwe lya mpepo yayidona mumavango ghakukwateramo.
- Vyavyonka kuwedererako kulitakamito vimenwa navikorama. Ntjene wiya aghu djonauka vimenwa navikorama navyo kudongonoka. Litapayiko vitondo kuvatera mukunomena ashi wiya ungi kwa kuvhura kukaravikorama vikuyendawire. Vikorama evi va tindika vantu pamavango ghavyo gha ntjitwe kuvhura ngoli kukakara kumavangomuwiya wa upe. Nakondadino, litapayiko vitondo kukara ukanguki wakuvatera mukupopera vikorama vyamuwiya.
- Edi ndo ndjira dapamughovo dakuverera wiya wa rukukutu ntanikutatera nakulitwalidiro kumburundu na rukukutu. Litetauro lyavitondo navitundwamo vyakutwaredera kumburundu kudjonaure ghukali nawa walivhu, vantuntani ukanguki wa vimunantani mparukito yavikwaliparu yira viruwana vyakuhamena ku vadinguli.
- Wiya kwakara liwedo takamito lya ntjitwe, muku kongawida nakukoreka mvhura ntani kuyimangurura kadidi mudimukano namudimukuro, ntani kwapoperanga muku fuka livhu mposhi likahanite mukumo wamema.

# LIDIMBURURO LYA MAVANGO GHA WAPERO KUTAPAYIKA VITONDO

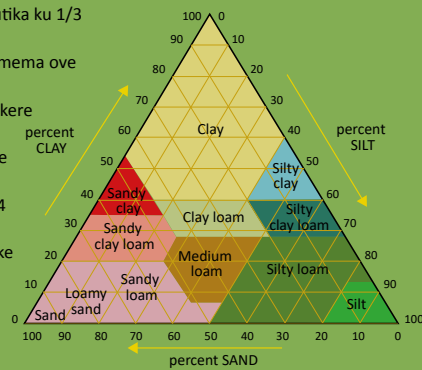
Liparu lyakuvyukuruka vitondo lire unenekuvhura vighupe mwaka lifere mukuvyutira vitondo vya vinene ntjeneshi vana viyangura. Mbyo vyakarera mulyo unene mukutoghorora kuruwanita livango lyaguhunga, mbyovyakarerashi ndjenditito yalitapayiko vitondo yatamekeranga pamavango ghovotoghorora. Maukaroghamwe gha ntjitwe nagho kurenkita vitwalidire kulitoghororo wa wiya ntani viruwana vya pashina Untu. Maukaro ghamwe nka nagho kurenkita udimburure ashi rudi rwa vitondo munke ghuvhura kutapeka nandjenditito munke yakutapeka eyi ghuvhura kuruwanita.

## Likonakono lya livango

Mughuyingi ghuna kuwana mapukurura kughamena ku livango naukaro walyo, mumuwa wakurenkita uyivi mukuhotoghorora rudi rwashitondo ndi rudi rwa shishwa oro rwawapero polyo livango. Koneka mapukururo ghano pakuruwana likonakono lya livango:

- **Ukarompepo:** Ukaro wa livango, murokwa wa mvhura. Kuhamena ukaropeke ntani mpepo ruha runo rw mapukururo kukuvatera unene kumapukururo ghamayingi [www.climate-data.org](http://www.climate-data.org)
- **Livhu:** Dimburura rudi rwa livhu. Palivhu kunakarapo shikovhututa sha likende lyakushetekita kuruwanita.

- 1 Ruwanita likende lyakuvyukilira ndi lyaku kengerera
- 2 Turalikende ukahe wa livhu wakutika ku 1/3 mukulisheteka
- 3 Yuda ruharumwe rwakuwedako mema ove ushuke ruha rumwe kuwira
- 4 Kutjunga dogoro livhu likugwanekere namema
- 5 Pungura pashipungwirotuterere viri 24
- 6 Ntjene maremoko taterera viri 24
- 7 Muruku rwa viri 48 mbando yina hepa kumoneka: livhu lyamusheke kuntji, ndombe pakatji, lirova kuwira
- 8 Shetekanita mbando kumwe yimwekumwe naunyayo
- 9 Ruwanita karata mukunegheda rudi rwalivhu mukushetakanita musheke, ndombe nalirova mumbando



Shifanekwatjanga 1: Lidimbururo rudi rwalivhu pakuruwanita likende lya kushetekita (<http://greengardensgroup.com/how-site-evaluation-whats-my-soil-type>)

- **Mafanayiko:** Livhu lyankondo kwakara pamavango ghapawiru shi vhlute pamavango ghakughurumuka.
- **Tafura yamutika wa mema:** Uyivi kuhamena udami mumutika wa mema kukara mbudi ya mulyo unene. Ntjene ove ndi farama yamaparambo kwakara napomba, kuvhura vikupe mapukururo kuhamena shivaro sha mema.
- **Mafanayiko ghamwe kuhamena ntjitwe:** Matimwititi ghakunyima ntani liruwanito lya livhu pantantani (viwekwa vyamandi kwalyeranga polyo livango ndi? Evi kuvhura vivhukite maghudito mukuturapo vitondo vyavipe ndi vishwa.)

## Kutoroghorora livango lyakutapayikira vitondo

Naruntje litoghororo lyakutapayikira kwalisheshupika vyapirango kukuyenda na unandima ndi liweko lya vimuna.

Ntjeneshi livango vanalitoghorora, Dimurudi vanahepa kuditulitapo vitombo vyadimurudi, mukurenkera valiti ngombe vaviyive nakutunditako vimuna. Ntjene apa horoka udito wakupira kulimburukwa ndi ghudito wakulyeramo nakulitiramo vimuna, kudikirako ndarate ya murudi. Ndarate ndiro unene yayo kuvhura kuyidikako ntjene vipopelita vimwekapi vivhure kuruwana. Murudi wandarata kughudikita kudimutayi dakuwa, yira hambo. Ndjira yimwe yakuruwanita vitondo mukukeverera vimuna vyakulya mahako. Ntjeneshi vitapayika vinakuru ntanivitondo vinawaperere nakurepa, ndarata kuvhura kuyighupako mposhi mukayiruwante kulivango limwe eli munakakuna.



Lifano 1: Uvhungu-vhungu (*Kingelia africana*) mulivhu lyo vikuni kughu cuma waNamibia (Roburg, CC BY-SA 3.0 <<https://creativecommons.org/licenses/by-sa/3.0/>>, via Wikimedia Commons)

## Litoghororo lya rudi rwa vitondo

Ntjeneshimapukururo ghakugwanenapo munaghapongayiki kughamena vinakugwanitapo vya livango lya kakunina, ntambo yakukwamako kutoghorora rudi rwavitondo ndi vishwa vyakuvhura kakunapo. Shitambo shakutoghorora rudi rwakukuyenda nalivango kuna kara shimpe ukanguki, vivhure kuyititapo likuro nampito daukorameno, vyavyo kutikitamo shitambosho vikunwa (vikare shi vitondo vya vikuni, ndi vyandya, navimwe ngoli).

Panahepa kukara likonakono lya pa undambo evi vikaro mulyo mukudimburura litoghororo, shihonena livhu na mpompa ya livhu.

## VITONDO VYAPAMPO VYAKUVHURA KURUWANITA MUKUTAPAYIKA KUUCUMA WANAMIBIA:

GHUGONGO (*Sclerocarya birrea*)

GHUSHIVI (*Guibourtia coleosperma*)

GHUVHUNGU VHUNGU (*Kigelia africana*)

GHUHAHE (*Baikiaea plurijuga*)

MPEKE (*Diospyros mespiliformis*)

GHUTIMBA (*Dialium englerianum*)

KAKUKURU (*Acacia galpinii*)

GHUPUPU (*Combretum collinum*)

## VITONDO VYA PAMPO EVI UVHURA KUTAPAYIKA MULIVANGO LYAMUROKWA WAUSHESHU:

GHUNTU (*Acacia erioloba*)

MUTERU TERU (*Maerua schinzii*)

GHUYWE (*Olea europea*)

MPINDU (*Euclea pseudobenus*)

GHUPARARA (*Peltophorum africanum*)

MUTUMBA NANTJUTI (*Pappea capensis*)

# WENI MUKUWANA LITAPAYIKO / NALIWEDERERO LYAVITONDO

Liwapayiko livango lyakutapayika vana kona kuviruwana kumeho mukurankera litapayiko liyende kumeho kwahana marangapeko pakuyatika mbutu.

Mulyo washitambo utura mumaghano pakuruwana liwapayiko lyalivango:



Kughupamo vitondo vimwe vyashakara pepi nopo unakutapayika.



Kuyitapo ndjenditito edi divhuro kuwapeka livhu livhura kukwata nakupungura mema ghamvhura gha mayingi unene. Dimukanko dakukonkomoka kudisheshupita mposhi livhu liwane ukorameno. Shihonena, shetekera ko kutura livhu unalifiki kumeho ure navitondo.



Kuruwana mavango ghamawa ghakupitira ndandani mulivango lyakukunina, rambangako namukumo walivhu lyatundo ndandani. Livhu lyamavhongwa lina hepa kutunda po.



Kutulitapo ndjenditito opo pakaro udito wamundiro nouli, vikoramaghona navampuku, kuvisheshupitapo.



Lifano 2: Shitakamitiro shavitondo (Kwavipulitira: W. Hager/Shutterstock.com)

Ntjeneshi livango linapu kuwapayika, likuno kutameka. Shingi shamaruvede, evi kwaviruwana kumbuto yakufudilira. Vimenwa kuvhura ku ura pamavango ghakughulitira vimeno ndi kuvhura ghuvikune na umoye kumbuto da una kashimba. Ntjene gha ukashimba mbutu unahepa kukadishimba kulivhango lyakaro na ukanguki ghopaumwene oghu wakaro na una nkondo, shihonena vikwa nyango vyovinene ntani vya utovara, ndi vitondo vyakaro vyavyukilira na madi ghamare. Lipakero mbutu lya kuku vinduka kuwapukurura likuro lyambuto; shihonena, kuyaveka mbutu yamaguni (*Strychnos cocculoides*) mumema kurenkita likuro liyeruke. Ntambo yalikuro lyautimba (*Dialium englerianum*) kuyeruka dogoro peresenta 68 kuditungona nakudiyaveka mumema.

Makushongo kwanegheda shi likuvhukito lyavitondo mukurwanita mbutu ndjenditito mukukulika mulivhu lyarukukutu muNamibia. Mbutu yinahepa kufika nalivhu mukurenkera likuro lyaliwa ntani liparuko lyambuto.

## Mapukururo ghakuwedererako mukukuna:



Likeverero mbutu kuvikorama ghona lyakara mulyo pakukuna mbutu mulivango lyakutakamitira vimeno.



Shirwo shakukuna ndi mbutu kukuyenda nawa nashirugho shamvhura, unenepo ntjeneshi livhu linaghoru kutwara mu ure wakutika (kungungunyikira sentimeta 20). Ntjene kapishi ngoli kutwikira kutekera unapumbwa mukutwara mwedi wakuhoza kunyima yalikuno.

Pakara ndjenditio dadipe dakukuna mumambangu pamaraka vyakurenkitira likuno lyavitondo likare ureru ntani viparuke nawa, unenepo ntjene tupu kuya kumaruvede gharukukutu. Kushihonena kukenga ku [www.groasis.com](http://www.groasis.com)

## LISHAYERO

Litetaghuro lyavitondo nalishetakanito livhu muNamibia kwatwalitiranga kulikombanito lyalikutundakano lyavitondo viyeramo naviruwano vyamparukito namakulito gha paliparu.

Litapayiko lya vitondo shiruwana shakuvyukilira mukurwanitapo liruwanito unene ntani lidjonauro unene lyawiya. Evi kuviruwana namafanayiko gha kudjiramo napa mavango ghakuvyukilira, ntani namarudi ghavitondo vya pampo muNamibia, vyavyo kuvhura vikare likoshonono lyaliparu ndi pangeshefa kumpumbwe da vantu pahana lidjonaghuro lya ukorameno wa ntjitwe.

Mpili momu vyakara likuno lyavitondoghona ndjenditito varuwanita nkehepano mukukuna vitondo namukuwederera vitondo, likuno lyaku vyukilira kurudi rwavitondo ndjo ndjenditito yakuhugvalita ntjeneshi mbutu vanafiki nalivhu.



## LITOROKO LYANKANGO

### Litapayiko lyavitondo [Afforestation]:

Ndjenditito yakukuna vitondo vyavingi mulivhu eli lyakaro navitondo vya vididi ndi mwapiro vitondo.

### Unantjitwe [Biotic]:

Liparu lyalikutundakano lya wiya, shihonena vinamwenyo, yira vitondo navikorama.

### Liparu lyampepo yayidona [Carbon sink]:

Wiya, lifuta, ntani navimwenka vya tjitwe kuvikengurura murupe rwa ukorameno wakuwana mpepo yayidona kuwira.

### Likutjindjo lya ukaro mpepo [Climate change]:

Vishorokwa vyamuudjuni nandjenditito yamakutjindjo wa ukaro mpepo mulikutjindjo lyakaro paudjuni, unenepo ntjene kwaviyititapo viruwana vya vantu.

### Likungo wiya [Community forestry]:

Nkehe uno ukaro wahamitira ngomo vantu pamukunda muviviaghuka vyamuwiya.

### Litetaghuuro lyavitondo [Deforestation]:

Shiruwana shalikenito vitondo palivango lyalinene.

### Wiya warukukutu [Dry forest]:

Rupe rwawiya oru rwakaro na ukaro wakukutapatana lyavitondo vyaparukango murukukutu mukukura mumpuku namulivhu lyamurukutu ndi livhu lya rukukutu.

### Livhu lyalikukutu [Hardpan]:

Ruha rwa kukukuta mavhongwa gha lirova ogho ghamonayikango munda ndi pawiru lya livhu kutanganita lipwiliro lya mema ntani likuro lyavitondo .

### Kutongona [Nicking]:

Ndjenditito yakukuna mbuto kumegho yakuyikuna.

### Liwederero Vitondo [Reforestation]:

Limeno lyavitondo pavyene ndi likuwederero lya wiya oghu wakarapo kare nawiya wamurukukutu.

### Mafanayiko [Topography]:

Marongikido ghapana ntjitwe ntani mafanayiko ghakuwedako kulivango.

## MAPUKURURO GHOKUWEDAKO

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'Promoting Sustainable Forest Management in the Kavango-Zambezi-Region in Namibia'



This project is funded by the European Union

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Nkurupemba, 2021

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