



Council for Geoscience

MUVHIGO WA NWAHA NGA NWAHA

2020/21

'Ndivho ya tshiimo tsha
tsiko ya ndi thikho ya
mveledziso ya muthu'



mineral resources
& energy

Department:
Minerals Resources and Energy
REPUBLIC OF SOUTH AFRICA

'Ndivho ya tshiimo tsha tsiko ya ndi thikho ya mveledziso ya muthu' – Mosa Mabuza, 2019

TSHIIMISWA TSHA NNYI NA NNYI MAFHUNGO NYANGAREDZI

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**Tshifanyiso tsha khavara: Zwishumiswa zwa u ḁiriḼa kha vhuṭambo ha u rwelaṭari ha luṭa lwa vuvhili lwa Karoo Deep Drilling, ine ya dovha ya ḁivhiwa sa Thandela ya Geo- environmental Baseline ngei Beaufort West, kha Vundu Ḽa Western Cape.*

Tshifanyiso nga Vho Justyn Davies

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MUTEVHE WA ZWIKHAU NA AKHIRONIMI

ADSL	Asymmetric digital subscriber line
AEMFC	African Exploration, Mining and Finance Cooperation
AI	Artificial intelligence
APP	Annual performance plan
BBBEE	Broad-based black economic empowerment
CAR	Central African Republic
CCUS	Carbon capture utilisation and storage
CEO	Chief Executive Officer
CGS	Council for Geoscience
COVID-19	Coronavirus disease 2019
CTBT	Comprehensive Nuclear Test Ban Treaty
CTBTO	Comprehensive Nuclear Test Ban Treaty Organisation
DMRE	Department of Mineral Resources and Energy
DPME	Department of Planning, Monitoring and Evaluation
EME	Exempted Micro Enterprise
ENGEODE	Engineering-geological database
ERP	Enterprise Resource Planning
Exco	Executive committee
GEMMAP	Geological Mapping and Mineral Assessment Project of Malawi
GGB	Giyani Greenstone Belt
GRAP	Generally Recognised Accounting Practice
GSN	Geological Survey of Namibia
GTP	Geoscience Technical Programme
HVAC	Heating, ventilation, and air conditioning
ICT	Information and communications technology
IMMP	Integrated and multidisciplinary mapping programme
IRP	Integrated resource plan
IS	Infrasound

KDD	Karoo Deep Drilling
MDP	Management Development Programme
MEWMP	Mine and Environmental Water Management Programme
MPRDA	Mineral and Petroleum Resources Development Act
MT	Magnetotelluric
MTSF	Medium-term strategic framework
NDP	National Development Plan
NNMP	Namaqua-Natal Metamorphic Province
OAGS	Organisation of African Geological Surveys
ORGEM	Office of Geological Research and Mining
PDAC	Prospectors & Developers Association of Canada
PFMA	Public Finance Management Act
PPPFA	Preferential Procurement Policy Framework Act
PS	Primary station
QSE	Qualifying small enterprise
RAPS	Reducing and alkalinity-producing system
REE	Rare-earth element
RTP	Reduced to pole
SAMINDABA	South African Mineral Deposits Database
SANS	South African National Standard
SANSN	South African National Seismograph Network
SEDEX	Sedimentary exhalative
UNISA	University of South Africa
US	United States
VMS	Volcanogenic massive sulphide

TSHIPIDA TSHA A:

Mafhungo Nyangaredzi

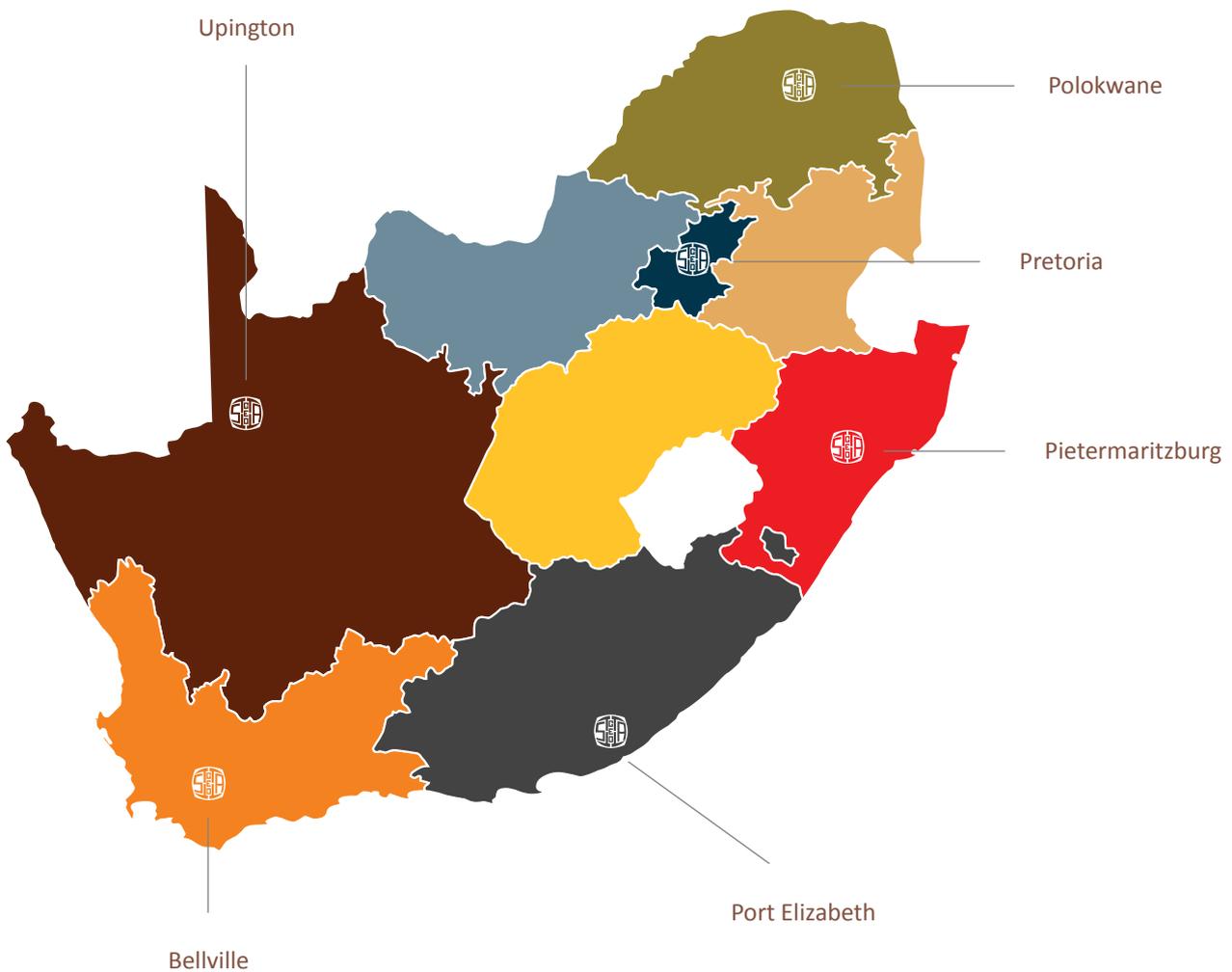


Vhorasantsi vha CGS vha sedza vhudzivha ha magwedzho a Zwigwada zwiṭuku zwa Karoo kha saithi ya U bwa ho Tsaho ya Beaufort West

KHORO YA SAINTSI DZA VHUPO

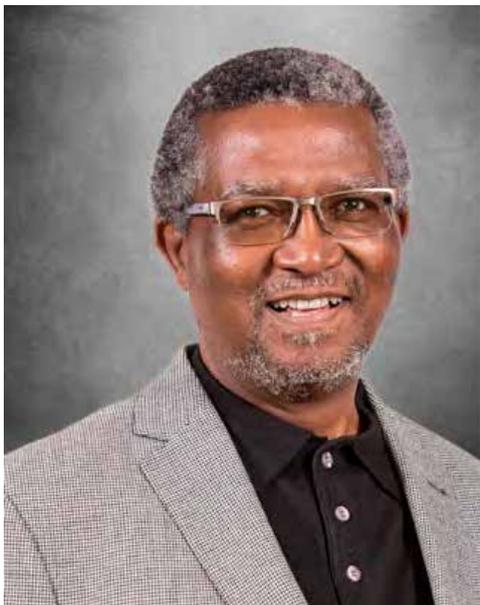
Mulayo wa Saintsi dza Vhupo, Mulayo wa vhu 100 wa 1993 sa zwe wa khwiniswa, wo thoma Khoro ya Saintsi dza Vhupo (CGS) sa, mafara data ya saintsi ya vhupo, mafhungo na nḡivho kha ḽa Afrika Tshipembe.

Vha CGS vho dzhena kha tshiimiswa tsha musalauno na zwiimiswa zwo khetheaho, ndaka na vhukoni. Fhethu ho sedzwaho ha saintsi ha dzangano hu katelaho, nzudzanyo dza saintsi ya vhupo, ikonomi ya vhupo, fisikisi ya vhupo, tshumelo dza musaukanyo, saintsi ya vhupo ha lwanzheni na vhupo, maḡiḡhavela na vhuinzhiniara ha saintsi dza vhupo, na zwiḡwe. Vha CGS vha na ofisi dza dzingu dza rathi Afrika Tshipembe, na ofisi khulwane, Silverton, Pretoria (Tshifanyiso tsha u thoma).



Tshifanyiso 1. Ofisi dza rathi dza madzingu dza CGS kha ḽa Afrika Tshipembe

1. MVULATSWINGA NGA MUDZULATSHIDULO WA BODO



MUDZULATSHIDULO WA BODO

Dokotela Vho Humphrey Mathe

COVID-19 yo sumbedzisa thodea ya uri CGS I dzule yo fhatuwa na u thogomela kha kuitele kwavho kwa bindu, na u sumbedzisa ndeme ya thikhedzo ya muvhuso nga murahu ha mvusuludzo ya ikonomi kha COVID na pulane dza u fhatulula. Vha CGS vho fhindula mvusuludzo ya ikonomi nga murahu ha COVID-19 na u fhatulula nga u tikedza Muhasho wa Zwiko zwa Minerala na Fulufulu, hu na tshumisano na Khoro ya Minerala, u ita mvetomveto ya 'Pulane ya Tsedzuloso ya Tshumiso sa vhutshilo ha nyaluwo ya ndowetshumo ya zwa migodi. Ro thoma levele dza tsedzuloso dzine dza sa sumbedzise ndeme ya saintsii dza vhupo kha la Afrika Tshipembe, nga nwambo wa u shaya u vhumungu u itela nzudzanyo dzi sa gumi kha tshikalo tsho teaho tsho linganaho u kunga madzangalelo u itela u wana mukovhe wa gumofulu wa 5% wa tsedzuloso ya zwibviswa zwa dzhangho Afrika Tshipembe. Hu na u thomiwa ha Mbekanyamushumo ya Nzudzanyo ya Saintsii ya Vhupo yo Tanganelanaho mathomoni a tshikhala tshanga sa mudzulatshidulo ho vha na zwinzhi zwo swikelelwaho. Nga tshifhinga itsho, shango lo dzudzanya tshikalo tsha 1:50 000, tshine tsha shandukisa fhasi ha 5% ya mavu a nga ngomu shangoni nahone u toda u swika kha u sa vha na mathihi a lwanzheni. U swika zwino, muvhuso wo vhumungu zwiko kha tshithathedzhi, zwo khwathisedzaho nzudzanyo dza nga ngomu shangoni u katela 9.03% mafheloni a 2020/21.

Ndi pfa ndo huliswa nga u newa tshikhala tsha u nekeda muvhigo wa Saintsii ya Mupo wa nwaha nga nwaha u katelaho nwaha wa 2020/21, nwaha wa u thoma wa tshikhala tsha Bodo ino. Hu kha di tou bva u fhela nwaha ho swika dwadzetshifu la COVID-19 la vilinganya matshilo a vhatu vha Afrika Tshipembe na u svela phanda na u ita izwo, hu na luza lwa vhuraru lu khou lavhelelwa nga 2021 fhedzi, thodisiso dzi sa na u vha hone ha khaelo shangoni lashu zwo disa fulufhelo lo vusuludzwaho la uri saintsii i do kunda kha dwadzetshifu. COVID-19 yo sumbedzisa thodea ya CGS uri hu vhe na vhumungu na u thogomela kha kuitele kwa bindu, na u sumbedzisa ndeme ya thikhedzo ya muvhuso nga murahu ha COVID u itela mvusuludzo ya ikonomi na pulane ya mvusuludzo.

Ro tea u dowela u shuma kha vhupo vhuswa, u livhana na khohakhombo dza COVID-19, u dzudzanyulula mbekanyamushumo dzashu na nyito dza saintsii u itela u tsireledza mutakalo na tsireledzo zwa vhashumi vhashu, hu khou naniswa u dzhenelela kha matshilo a vhatu vha Afrika Tshipembe. Mathomoni a kotara ya vhuza, vhashumi vha 29 vho wanala vhe na dwadze ili. ri di hudza u vha uri kha CGS ho vha na u fhola ha 100% kha avho vho kwameaho. Ri do svela phanda na u tutuwedza vhashumi u vha na vhumungu na u tevhedza maga a COVID-19.

Vha CGS vho fhindula pulane ya mvusuludzo ya ikonomi na u fhatulula ikonomi nga murahu ha COVID-19 nga u tikedza vha Muhasho wa Minerala na Fulufulu (DMRE), hu na tshumisano na Khoro ya Minerala, u ita mvetomveto ya Pulane ya Tshumiso i Sedzuluswaho vhutshilo ha ndowetshumo ya zwa migodi na nyaluwo ya hone. Ro thoma levele dza u sedzulosa dzine dza sa sumbedzise ndeme sa saintsii dza mupo dza Afrika Tshipembe, nga nwambo wa u shaya u vhumungu u itela nzudzanyo dzi sa gumi kha tshikalo tsho teaho tsho linganaho u kunga madzangalelo a tsedzuloso u itela u wana mukovhe wa gumotuku wa 5% wa tsedzuloso ya zwibviswa zwa dzhangho kha la Afrika Tshipembe. HU na u thoma ha Mbekanyamushumo ya Nzudzanyo ya Saintsii ya Vhupo yo Tanganelanaho (IMMP) mathomoni a tshikhala tshanga sa mudzulatshidulo wa Bodo, ho swikelelwa mvelaphanda i mangadzaho. Nga itsho tshifhinga shango lo dzudzanywa kha tshikalo tsha 1:50 000, tshi katelaho fhasi ha 5% ya nga ngomu shangoni na zwine zwa nga a hu na na nthihi ya vhupo ha lwanzheni. U swika zwino, muvhuso wo vha u na zwiko kha tshithathedzhi, zwi khwathisedzaho nzudzanyo ya nga ngomu shangoni u swika kha 9.03% mafheloni a 2020/21. Tshumisano yo bveledziswaho na vha Mmbi ya Afrika Tshipembe kha khethekanyo ya phendelashango ya Muhasho wa Vhupo, Maqaka na Vhureakhovhe dzo sedza kha u tikedza vhumungu ha u konisa u swikelela u katela ha vhupo ha lwanzheni 0.3% kha nwaha wa muvhalelano u tevelahho. Izwi zwi tikedzwa nga u wanala ha vesele thukhu ya thodisiso ine ya vhidzwa u pfi R/V Nkosi, ine ya do khwinisa mbekanyamushumo ya nzudzanyo ya vhupo ha lwanzheni.

Dziwe dza tsumbo dza kushumele kwa dzangano ndi Mbekanyamushumo ya Karoo Deep Drilling (KDD), ine yo sedza kha u bveledza mutheo wa vhumungu ha vhupo Karoo tshipembe u itela u divhadza na u khwathisa muhanga wa ndaulo u itela khonadzeo ya mveledziso ya gese ya tombo kha la Afrika Tshipembe. Tshipida tsha ndeme tsha ngudo dza mutheo ndi saintsii ya vhupo ha masia manzhi, kathihi na tshiimo tsha zwino ngudo dza maqi na seisisimithi kha vhupo na vhupo vhu sumbedziswaho hune, tsumbo, seisisimithi zwi nga tutulwa nga u sedza na u tambiswa ha gese ya tshileithi.

Ri khou dovha ra sedza kha thekhinoḽodzhi na tshumiso ntswa dza u tandulula thaidzo dza ḽifhasi. Hezwi zwi katela vhuḽali hu si ha tsiko u khwaḽisedza nzudzanyo yo livhaho, u topola na u ḽalulwa ha sisiteme dza mupo dzi nga ho sa ndango dza maḽithavhela na khombo dza mupo.

Ri khou dovha ra sedza thekhinoḽodzhi ntswa dzine dza nga shumiswa u tandulula thaidzo dza ḽifhasi. Hezwi zwi katela vhuḽali vhu si ha tsiko u itela nzudzanyo dza u dzudzanya na u topola na u ḽalula sisiteme dza mupo dzi nga ho sa ndango ya maḽithavhela na khombo dza mupo.

Tshumisano ya vhubinduzi ya vha CGS i nga shumiswa hu si u bveledza na u tikedza Saintsia ya Vhupo ya tshimiswa u ita Vhuambeli na tshithirathedzhi tsha u tikedza mveledziso. Inwe tshumisano yo bvelelaho i kha Thodisiso ya zwa Vhupo ya Eswatini, ine ya khwaḽisa u dzhenela ha saintsia ya vhupo ya Afrika Tshipembe kha Thanganelo ya Dzingu kha nyimele ya mbekanyamaitete ya mashango a nḽa. Vha CGS na vhone vha a shumisana kha mbekanyamushumo ya nyengedzedzo ya khonḽhira ka ya miḽwedzi ya 12 u itela Mbekanyamushumo ya Nzudzanyo ya zwa Vhupo na Minerala Malawi. Heyi ndi tshumisano na vha BRGM (Geological Survey ya France) na GTK (Geological Survey ya Finland) u shumisa mbekanyamushumo ya Malawi. Tshumisano na vha Tsedzuloso ya zwa Vhupo ya Namibia i khou bvelela zwavhuḽi, ho sedzwa nzudzanyo i engedzaho ya u katela ya Namibia kha tshikalo tsha 1:50 000. Tshumisano ya Afrika i khwaḽisedzwa nga tshumisano na Tshimiswa tsha Tsedzuloso dza zwa Vhupo dza Afrika (OAGS).

Vha CGS, hu na tshumisano na vha African Exploration Mining na Finance Corporation (AEMFC), vha khou nekedza thikhedzo ya thekhinikhala kha DMRE u bveledza tshumisano ya masia oḽhe vhuḽali ha Afrika Tshipembe na Riphabuḽiki ya Afrika Vhuḽali (CAR). U swika zwino, vha CGS vho khunyeledza tshumisano ya tshithirathedzhi na vha CAR sa vhashumisani navho, Office ya Geological Research na Mining (ORGEM), nga Phando 2021.

Zwino kha ḽwaha wa vhuvhili wa tshumelo yavho kha CGS, miraḽo dza Bodo vho khwaḽa kha vhuḽavhelesi havho na vhuḽifhinduleli vhavho ha u wana tshithshavha tsho bvelelaho na u shanduka tshi konisaho thasululo dza saintsia ya vhupo. Bodo i na vhuḽkwamani ho fhimiwaho ho livhanywa zwifhatuwo u bva tsha vha tholwa nga 1 Shundunthule 2020 nga ḽwambo wa thivhelo dza COVID 19. Fhedzi, yo lavhelesa mveledziso ya sisiteme ya vhuḽolamuvhalelano u konisa vha CGS u tevhedza thodea dzavho dza theo ya mulayo. Muḽolamuvhalelano muhulwane wa ḽa Afrika Tshipembe na vhone vho ita zwo teaho zwa vhuḽolamuvhalelano sa maga a dzangano na maffungo a kushumele u nekedza khwaḽisedzo nga kha khunyeledzo dza vhuḽolamuvhalelano. U khwaḽisedza zwoḽhe, thimu ya CGS, tshimiswa tsho rekhoda 86% ya u swikelela ho sedzwa kushumele kwavho, hu na muvhigo wa vhuḽolamuvhalelano u si na khandezano kha ḽwaha wa vhu 19 miḽwaha i khou tevhelana.

Vhashumi vha furaru malo vho ḽiḽwalisa sa vha ḽanganedzi vha bazari vha ḽwaha zwa akademi wa 2021, vhane khavho vha, 53% vha vha vhafumakadzi (vha rathi vhavho vha khou ita PHD). Hezwi zwi sumbedza vhuḽikumedzeli ha vha ndangulo ha u vha na mabulannga avho nga u vhuḽunga kha vhuḽoni havho, nga maanḽa ha vhafumakadzi.

Ndi fhululedza Dokotela Vho Maphuthi Kwata na Dokotela Vho Valerie Nxumalo kha u thaphudza digirii dza vhuḽokotela. Na Vho Litshedzani Mutele, Vho Thato Kgari, Vho Noluvuyo Dudumashe na Vho Melvin Sethobya kha digirii dzavho dza Masitasi. Vho shuma Vho Dokotela Asinne Tshibubudze na Dokotela Vho Cameron Penn- Clarke, vhe vha ḽanganedzwa sa khonani dza Geological Society ya South Africa (GSSA) ho sedzwa nungo dzavho dza u alusa saintsia ya zwa vhupo ya shango na mutheo wa ḽivho. U swikelela uhu hu sumbedza nga ngoho ndeme ya u vhuḽunga kha vhaswa u itela u fhatu vhuimo ha matshelo vhu re na murafho wo ḽalaho nga khonadzeo.

Bodo i pfukisa ndiliso dzayo kha vhashumisani vhe vha xeḽelwa nga miraḽo ya muḽa na dzikhonani uno ḽwaha. Vhuḽungu ha u xeḽelwa hu kwama na muḽa wa CGS nga maanḽa nga lufu lu songo lavhelelwa lwa Vho Lillian Mathonsi, Muofisiri Mulindi kha Yunithi ya Bindu ya Tshumelo ya Vhuḽsireledzi, Vho Odirile Welcome Dingoko, Minidzhere kha Dzhiophysiki na Yunithi ya Bindu ya u Vhona zwa kule, Vho Zukiswa Gladys Futiso, Mukulumagi kha Yunithi ya Bindu ya ndangulo ya Zwileludzi.

Ndi tshi khunyeledza ndi livhuwa Muhulisei Minisita wa Zwiko zwa Minerala na Fulufulu, Vho Gwede Mantashe (MP), kha thikhedzo yavho ine ya sa gume kha Bodo na tshimiswa na kha mudzulatshidulo wa Komiti ya Phothifoljo ya Phalamennde ya Zwiko zwa Minerala na Fulufulu, Vho Sahlulele Luzipho (MP), na komiti yavho kha nyendedzi yavho i sa gumi na thikhedzo ya mushumo wa ndangulo khulwane ya CGS, vhashumi vha saintsia na vhatikedzi, vhuḽikumedzeli havho na kushumele kwavho kwa maḽhakheni kha ndaela dza CGS ndi zwa ndeme vhuḽkuma.



Dokotela Vho H Mathe
Mudzulatshidulo
Bodo ya Khoro ya Saintsia dza Vhupo
31 Fulwana 2021

2. MBONALONYANGAREDZI NGA MUOFISIRI MULANGULI MUHULWANE



MUOFISIRI MULANGULI MUHULWANE

Vho Mosa Mabuzza

Vha CGS vho t̄anganedza muhanga wa vhushaka vhukati ha mivhuso u itela u khwāhisedza kutshimbidzele vhuimo vhuraru ha Muvhuso. Musi wa ṅwaha wa muvhalelano, miṅangano yo farwa na vhashumisani vha ndeme kha vhuimo vhuraru, zwe zwa konisa vhorasantsi vha CGS u swikelela mavu a nnyi na nnyi na a phuraivethe u ita ṅhoḁisiso. Miṅangano yo dovha ya farwa nga vhashumisani vha mavundu i itela u vula mahothi a tshumiso ya Mbekanyamushumo ya Thekhinikhala ya Santsi ya zwa Vhupo (GTP). Tshumiso yo bvela phanḁa ya IMMP ya lushaka nga kha GTP, ho sedzwa khuvhanganyo yo sisiṅamethiki ya ṅhoḁisiso dza masiandaitwa mahulwane dza santsi ya vhupo, nzudzanyo dza santsi ya vhupo kha ṅwaha u sedzuluwaho. Vha CGS vho fhungudza GTP u itela u fhindula mbekanyamushumo ya mvusuludzo ya ikonomi nga murahu ha COVID-19, hu na u bvela phanḁa na mbekanyamushumo ya nzudzanyo yavho yo dodombedzwaho kha tshikalo tsha 1:50 000 na u engedza vhukatele ha nga ngomu shangoni u swika kha 9.03% ho bviswaho kha mapa ya 18 ya ndeme ya ṅṅha ya zwa vhupo yo bveledzwaho. Thandela dza mvusuludzo ya ikonomi dzo sedza kha minerala ya matshelo, hu tshi katelwa mutheo na methala ya kale, zwipiḁa zwa shango zwi sa sokou wanala, malasha. Ndingo dza mutheo dza vhupo dzine dza khou itwa sa tshipiḁa tsha Mbekanyamushumo ya KDD dzo bvela phanḁa kha ṅwaha wo sedzwaho. Mbekanyamushumo i lavhelelwa u ṅekedza mutheo wa santsi u itela muvhuso uri u dzhiele ṅṅha khetho dzawo dza tzedzuluso ya gese tsa tshijethi na ndingedzo. Mbono i songo dzhenelaho ya magwedzho i tea u vha na mbuelo khulwane yo ṅekedzwa kha Masipala wa Beaufort West. Nga Luhui 2018. Nga itshi tshifhinga, vha Western Cape vho vha vho livhana na gomelelo li shushaho kha divhazwakale ya zwino, magwedzho mavhili, ane a vha vha vhukoni ha lithara dza 33 nga ṅwedzi, a isa phanḁa na u ḁisa thuso i ṅoḁeaho kha tshishavha. u swika zwino masipala wo bvisa na u phaḁaladza lithara dzi fhiraho 500 dza maḁi. Mbekanyamushumo ya KDD zwa zwino yo thoma u bwa 3 500m gwedzho la ṅhoḁisiso la vhudzivha na nzimo ya siṅiratigirafiki0, hu na gese ya methane (CH4) yo vhonelelo fhasi u swika kha 1734m na kha 2325m.

Ndi pfa ndo takala u vha ṅekedza muvhigo wa ṅwaha nga ṅwaha wa 2020/21 une wa sumbedzisa nyito dza ṅwaha sa rekhodo ya ngelekanyo i tshilaho. Zwo tea tsha u thoma u rwela zwanḁa u dzhenelaha ha vathu nga muthihi na guṅe ha ndangulo ya CGS na vhashumi nga u angaredza kha u futelela, vhuḁikumedzeli na vhukoni ha phurofeshinala ho zwi konisaho u tshimbila kha ṅwaha we wa vha u tshi konḁa vhukuma na u ṅekedza vhuḁifhinduleleli ha Vha CGS. Ndingulo yo khwāhaho ya COVID-19 nga Bodo yo tikedza kuvhusele na pfananyo ya nungo dza u lwa na khohakhombo dza dwadzetshifu ili. sa thimu, roṅhe ri nga livhuwa uri ro bvelela u bva kha ṅwaha wo fhiraho ri si na na luvhadzi na u livhuwa thikhedzo i sa gumi ya Bodo.

Vha CGS vho t̄anganedza muhanga wa vhushaka ha mivhuso, u khwāhisa pfananyo na vhuimo hoṅhe vhuraru ha Muvhuso. Musi wa ṅwaha wa muvhalelano, miṅangano yo farwa na vhashumisani vha ndeme kha vhuimo vhuraru hoṅhe, zwe zwa konisa vhorasantsi vha CGS u swikelela mavu a nnyi na nnyi na a phuraivethe

u ita ṅhoḁisiso. Miṅangano yo dovha ya farwa na vhashumisani kha mavundu o fhambanaho u vula mahothi a tshumiso ya Mbekanyamushumo ya Santsi ya Vhupo ya Thekhinikhala

(GTP). Vhukwamani na muvhuso wapo ho khwāhisedzwa nga kha u dzhenelaha kha sesheni dza vhupulani ha tshixirathedzhi dza Masipala ya Tshixiriki ya Mopani na Waterberg Limpopo hu khou tikedzwa Tshiedziswa tsha Mveledziso ya Tshixiriki.

Vha CGS vha na mashudu a u shuma na Muvhuso wa Zwiko zwa Minerala na Fulufulu na Khoro ya Minerala ya Afrika Tshipembe u ita mvetomveto ya Pulane ya Tshumiso ya Tsedzuluso, u dzhenelaha ha ndeme ha ṅowetshumo ya migodi kha 'Pulane ya U fhaṅulula na u Vusuludza Afrika Tshipembe". i sedza kha u swikelela nyito dzi fhimeaho, dza vhukuma, dzi lavhelelwaho nahone nga tshifhinga sa zwe zwa bulwa kha vhuḁiimiseli ha lushaka ha gumofulu la 5% ya zwibviswa zwa tzedzuluso ya dzhangano kha miṅwaha miraru u ya kha miṅanu i tevhelaho.

Ndi zwa ndeme u thoma nga u livhuwa vhatu na muthu nga muthihi kha zwe a ita sa ndangulo ya CGS na u futelela ha vhashumi vhothe, vhuḍikumedzeli na vhukoni ha phurofeshinala zwe zwa konisa u buḍekanya kha ṅwaha u konḍaho na u bveledza vhuḍifhinduleli ha Vha CGS.

Vha CGS vho shuma mushumo wa ndeme wa u khwaḥisa vhlavhelesi na ndingo dza masiandaitwa a seisimisithi kha vhupo ha migodi phanḍa ha u thomiwa ha u valwa hafhu ha u shuma na migodi nga murahu ha u valwa ha shango u ya nga ha Ndimba ya vhuḅa, S11(K) (3) yo khwiniswaho ya Tshiwo tsha Lushaka Ndaulo dza Mulayo wa Ndangulo dzo ganḍiswaho nga ḵa 16 Lambamai 2020. Musi kotara ya u thoma ya ṅwaha uno une wa khou sedzulusa. Vha CGS vho kumedzela zwiko zwavho kha u shuma na vha DMRE u ita mvetomveto dza Ndaulo dza Mulayo wa Saints ya Vhupo, une wa bvisela khagala mbetshelwa dza Mulayo wa Vhupo wa 1993, sa zwe wa khwinisa, na u thomiwa nga Vha CGS. Ndaulo dzo dzheniswa kha gurannḍa ya muvhuso u itela mabulamuhumbulo a nnyi na nnyi nga 2020/21 na vhashumisani vha ḍo kwamiwa nga 2021/22 musihumbulo na mabulamuhumbulo othe o no wanala.

Tshumiso yo bvela phanḍa kha IMMP dza lushaka u mona na GTP, ho sedzwa khuvhanganyo ya sisitemethiki kha masiandaitwa mahulu a thoḍisiso dza saints. kha ṅwaha wo sedzwaho, Vha CGS vho fhungudza GTP u fhindula mbekanyamushumo ya mvusuludzo ya ikonomi nga murahu ha COVID-19, hu na u bvela phanḍa na mbekanyamushumo yavho ya nzudzanyo yo dodombedzwaho kha tshikalo tsha 1:50 000 na u engedza mapa wa u katela ngomu shangoni u ya kha 9.3% yo sumbedziswaho kha mapa ya zwa mupo wa ndeme ya ṅḥa wo bveledzwaho. Thandela dza mvusuludzo ya ikonomi na minerala ya matshelo, hu tshi katelwa methala ya mutheo ya vhuḍi na zwipiḍa zwa ḵifhasi (REEs) na malasha.

Kha vundu ḵa Northern Cape, ho tevhelwa zwo sedzwaho zwo vhalaho zwa mutsho wa ndeme ya ṅḥa na minerala ya matshelo hu na u kuvhanganywa ha data ya masia manzhi, hu tshi katelwa dzhioḵodzhi, dzikhemisithiri na dzhifisikisi. Kuitele kwa sisiteme dza minerala kwo itwa hu khou shumiswa nzudzanyo dza nnḍa, u sedzulusa u kule, dzhiofisikisi ya dzingu na dzikhemisithiri. Vhupo vhuswa ho wanalaho nga kha saints ya vhupo u fara methala na minerala yo ḍalaho ho katela Orange River Pegmatite Belt, hune ha vha na u swika kha 67% u fhira zwe zwa vha zwo humbulelwa. U bwa dziṅwe minerala dzo sedzwaho zwi ḍo thoma kha miṅwaha ya nga nnḍa. zwi songo dzudzanyea zwa dzikhemikhaḵa zwo topolwaho na u shumisa tzedzuluso dzo dodombedzwaho kha Vundu ḵa Northern Cape (Kenhardt) na rorth West (Ga-Ramokoka na Witfonteinrant) u pfesesa sisiteme dza u ita minerala.

U bwiwa ha izwi zwi songo ḍowelea, zwine zwa sumbedza khonadzeo dza nikḵi, khroumu, khobalathi na fosifeithi, zwi ḍo thoma nga murahu ha mbekanyamushumo ya vhuḵwamani na vhashumisani.

Ndingo dza mutheo dza vhupo dzine dza itwa sa tshipiḍa tsha Mbekanyamushumo ya KDD dzo bvela phanḍa kha ṅwaha u ṅewa khou sedzulusa. Mbekanyamushumo i lavhelelwa u ṅekedza mutheo wa saints u itela uri muvhuso u dzhieḵe ṅḥa khetho dza tzedzuluso ya gese ya tshileithi na u sa shumisa zwavhuḍi. Mafhungo a ndeme a khou bviswa u khwinisa kupfesesele kwa dzhioḵodzikhala, ndingo dza khonadzeo dza ikonomi, vhuḍziki ha fhasi, u ita phurofaili ya maḍiḥavhela, u edzisa seisimisithi ya dzingu na ndingo dza masiandaitwa a vhupo. Magwedzho mavhili a songo tsesaho o sumbedzaho u vha na mbuelo ya ṅḥa o ṅekedzwa Masipala wa Beaufort West nga Luhui 2018. Nga itsho tshifhinga, Western Cape yo vha i khou livhana na gomelelo ḵihulu kha ḍivhazwakale ya zwino. Magwedzho mavhili, a re na vhuḵoni ho ṅangelanaho ha ḵithara dza miḵioni dza 33, a bvela phanḍa na u ḍisa thuso i toḍeaho kha tshitshavha u swika zwino, masipala wo bvisa na u phaḍaladza maḍi a fhiraḵo ḵithara 4 dza miḵioni dza 500. Mbekanyamushumo ya KDD zwa zwino yo thoma gwedzho ḵa thoḍisiso ḵa nzimo ya 3 500m. Kha ṅwaha une wa khou sedzulusa, 2412.06m yo bwiwa, hu na gese ya methane (H) yo vhoneḵa kha 1734m na 2325m.

Nga ṅwaha une wa khou sedzulusa, Vha CGS vho thoma vhuḍifhinduleli ha zhendedzi ḵi shumaho u itela U thubiwa ha Khaboni. Thandela ya Tshumiso na U vhuḵungwa (CCUS), tshumisano ya Muvhuso wa Afrika Tshipembe na Banna ya ḵifhasi. Thandela ya CCUS yo shumisa vhuḵunzhi ha mafhungo a dzhioḵodzikhala a re hone u linga saithi dzi re tsini na zwihasaladzi zwa khaboni Mpumalanga. Saithi dza u vhuḵungwa dzo topolwaho zwino dzi katela matombo a pfikisaho maḍi a muḵo -simi dza gese ḍo tsaho dza malasha na u vhuḵungwa ha basalathi.

Hu tshi tevhedzwa u shumiswa ha thekiniki da vhuḵali vhu si na mupo, ho nangwa magwedzho o vhalaho na u bwiwa Phuthaditjhaba (Thandela ya Maluti-a-Phofung). Magwedzho othe o livhanyiswa na vhuḵakhi ha dzhioḵodzikhala, zwi imelelaho sisiteme dzi re na vhuḵakhi dzi songo topolwa. Gwedzho ḵithi ḵi shumesaho ḵi ṅekedza ḵithara dza 12/muthethe, zwine zwa ita tshiko tshi vhoneḵaho tsha maḍiḥavhela u itela tshitshavha tshi si na maḍi tsha Phuthaditjhaba.

Kha u tikedza Muhanga wa Tshithirathedzhi wa Tshifhinga tsho Linganelaho (MTSF) ndeme ya vhu 5 kha thanganyelo ya tshikhala, mahaya a vhathu na muvhuso wapo, na Tshiedziswa tsha Mveledziso ya Tshithiriki, Vha CGS vho bveledza thandela dzi ngaho dza nzudzanyo yo mapa yo anganyelwaho wa ndeme wa Vundu la Eastern Cape. Mvelelo u bva kha thandela idzi dzo topolwaho dza rathi dza vhupo ha khwinesa u itela u anganyela havhudi ho sedzwa zwiitaluli zwadzo zwa mbonalo. Vha CGS vho bvela phanda na u tikedza ndisedzo u mona na Vundu la Free State nga tshumisanano na Muhasho a Vhudzulo ha Vhathu wa vundu. Saithi dza thandela dza fumbili nthihi dzo sedzuluswa u swika zwino nahone mivhigo miya ya tzedzuluso dza saithi yo khunyeledzwa uno nwaha une wa khou sedzuluswa.

Sa tshipida tsha tshumisanano ya tshithirathedzhi na Dzhendedzi la Mveledziso ya Dzinndu, Vha CGS vho ita ndingo dza dzhiojodzhikhala na phurofaiji ya khohakhombo yo dodombedzwaho kha nyingadorobo dzo topolwaho dza vhupo ha Greater Khutsong nahone ha itwa phurofaiji ya khohakhombo ya dolomaithi hu khou tikedzwa muhanga wa tshithirathedzhi wa vhudzulo ha vhathu na vhpulani ha themamveledziso kha dzingu.

Maelana na vhudifhinduleli ha Muvhuso ha u sa londa na u shaya mupe (D & O) kha migodi Afrika Tshipembe, vha CGS vho vala migodi fhethu huha ho vuleaho ha khombo migodini kha nwaha une wa sedzuluswa na u shandukisa nyito dza thandela u itela uri 2021/22 hu sedziwe fhedzi kha zwi elanaho na thoddiso kha mafhungo aya. Mbekanyamushumo ya Vhupo ha Mugodi na Ndangulo ya Maqi (ine ya ambiwa sa Thandela ya Maqi mugodini) yo bvela phanda na u lavhelesa zwiithirathedzhi zwa ndangulo i sa nyethi kha maqi a mugodini fhanu Afrika Tshipembe. U fhatwa ha mugero wa Van Ryn ho fhedziwa, hu na vhuqimisi ha u thivhela lithara dzi swikaho 60/ muthethe dza maqi kha u dzhena milongani ya mugodi, ha vhlungwa R25 milioni nga nwaha kha sisiteme ya u thogomela bommbi.

Vha CGS vha bvela phanda na u shumisa Mbekanyamushumo ya Vhuswaledzi ha Saints ya Vhupo ngei Namibia na Malawi na thikhedzo ya Mulangano wa U fhelisa Ndingo Nyangaredzi dza Nyukilia (CNTBT).

Maguvhangano ya nwaha nga nwaha ya CGS yo vha nga dzi 4 na dzi 5 thafamuhwe 2021kha lubuvhisia. Hu na thero ya 'Saints ya Vhupo - thikho ya mveledziso ya muthu - mutheo wa zwothe zwi itwaho nga vha CGS - maguvhangano yo sumbedzisa uri mafhungo a saints ya vhupo ndi a ndeme kha u bveledza ndivho

ya saints ya vhupo (vhugudisi na mveledziso) na u tikedza vhudifhinduleli ha mveledziso ya lushaka zwo ditika nga mveledziso ya ikonomi, vhutsireledzi ha fulufulu, Mbekanyamaitele ya Tshanduko ya Fulufulu ya Vhukuma, vhutsireledzi ha zwiliwa, madithavhela, u swikisa kha gumofulu themamveledziso na tshumiso ya mavu i sa nyethi, tshumiso dza vhuṭali vhu si ha mupo kha zwa saints dza vhupo, vhufa ha saints dzi si dza vhupo na ndeme ya vhlavhelesi ha vhupo. Vhorasaints vha CGS, dziphurofesa na matshudeni, phurofeshinala dza ndowetshumo na dzo diimisaho vho vha vhe vhaṭwe vha vho dzhenelelaho kha khoniferentsi, fhedzi u dzhenelela ho dovha ha sumbedzisa ndowelo ya mbekanyamaitele ya nnda ya u tangana ha dzingu kha la Afrika na u aluwa ya swika mashangoḍavha kha vhashumisani na vfarisani. Maguvhangano yo vha pulatifomo ya mathakheni kha tshitshavha tsha saints ya vhupo u avhelana mihumbulo, na u dikhwiniisa kha mveledziso dza thoddiso ntswa na tshumiso dza saints ya vhupo, u itela vhorasaints vhaswa vha CGS uri vha kone u tana vhuḱoni ha thekhinikhala, hune ha sa divhee kanzhi kana u dzhielwa ntha. Mushumo wo bveledza u gandiswa ha matshimbidzele a khoniferentsi a 55.

Nga 2021/22, vha CGS vha do pembelela nwaha wa vhu 110, vho sikwa nga kha u tanganyiswa ha zwiimiswa zwiya zwa vundu zwa vha Tshimiswa tsha thoddiso dza zwa Vhupo dza Lushaka, ya kona u thomiwa nga 1993 sa Khoro ya Saints ya Vhupo. Maguvhangano khulwane i khou dzudzanywa ine ya do vha i sedzaho masia othe, ine ya katela vhashumisi vho fhambanaho vha zwibveledzwa zwa saints ya vhupo.

Tshitatamenndetshavha CGS tsha Tshiimo tsha Masheleni tshi sumbedza ndaka yothe ine ya vha R741.4 milioni, ine ya vha na ndaka i si ya Zwino na ndaka ya Zwino ine ya vha R360.5 milioni na R380.9 milioni. Vha CGS vho khwaṭhisa vhuḱuma kushumele kwavhudi, nga maandā musu hu na zwifhinga zwi konḱaho zwa COVID-19 ye ya kwana tshifhinga tshine tsha khou vhighwa nga hatsho, hu na mbuelo ya R525.8 milioni na ndozwo thukhu ya R0.7 milioni. Muvhigo nyangaredzi wa zwa masheleni u kha tshipida tsha E kha muvhigo uyu.

U sa nyetha ndi tshithu tsha ndeme tsha vhudifhinduleli ha vha CGS sa bindu la levele ya masheleni/ikonomi, matshilisanano, vhashumisani na vhupo. U sa nyetha ho katelwa kha zwo sedzwaho zwa saints na vhubveledzi nga ngomu ha dzangano nahone ri na mashudu a u vha na vhashumi vha mulalo nahone vho fhambanaho vane vha sedza CGS sa mutholi we vha mu nanga. Ndi tanganedza nga zwanda zwivhili mirado miswa ya thimu

ya CGS. Kha avho vho ri tšutshelaho, ri a livhuwa tshumelo yavho nahone zwi vha nakele kha zwine vha khou shuma zwone phanda.

Nwaha muñwe na muñwe u na ntha na fhasi. Kha nwaha une ra khou sedzulusa, vha CGS vho xeledwa nga dziñwe mpho, hu tshi katelwa vhañwe vha vhashumi vhukuma vha saintsisi ya vhupo, nga kha u notha. Ri pembelela u dzhenelela hu mangadzaho ha vhashumisani avha vhe vha shuma zwavhudi kha dzangano. Vhanna na vhafumakadzi vha tevhelaho ndi vhañwe vha vhe vha kumedzela vhutshilo havho kha tshimiswa:

- Vho Gregory Allan Botha - miñwaha ya 38 sa Senior Specialist Scientist kha Geoscience Mapping Business Unit.
- Vho Maria Magdalena Schalekamp - miñwaha ya 22 sa Technical Officer Economic Geology na Geochemistry Business Unit.
- Vho Lorraine van der Merwe - miñwaha ya 32 sa Chief Librarian kha Facilities Management Business Unit.
- Vho Christopher Hatton - miñwaha ya 11 sa Specialist Scientist kha Mapping Geoscience Business Unit.
- Vho Fhatuwani Leonard Ramagwede - miñwaha ya 12 sa Executive Manager, miñwaha mivhili ya sa Technical Advisor kha CEO, na nwaha muthihi sa Chief Scientist in the Economic Geology na Geochemistry Unit.
- Vho Alazar Yosef Billay - miñwaha miñanu sa Specialist Scientist kha Economic Geology na Geochemistry Business Unit.
- Vho Noluviwo Adelaide Qayiso - miñwaha ya 28 sa Creditors Administrator kha Finance Management Business Unit.
- Vho Lindiwe Eunice Ngcobo - miñwaha ya 38 sa Cleaner kha Facilities Management Business Unit.
- Vho Michael Solomon Ntuli - miñwaha miña sa Cleaner kha Facilities Management Business Unit.
- Vho Sekgowe David Kgaditse - miñwaha ya 39 sa Technical Officer kha Analytical Services Business Unit.

Sa zwe zwa bulwa nga mudzulatshidulo, ro tungufhadzwa vhukuma uno nwaha nga u xeledwa nga mirado miraru ya ndeme ya thimu, vha re Vho Lillian Mathonsi, Security Officer kha Protection Services Business Unit, Vho Odirile Welcome Dingoko, Manager kha Geophysics na Remote Sensing Business Unit, na Vho Zukiswa Gladys Futiso,

Cleaner kha Facilities Management Business Unit. Ri lila na vhafuñwa vhavho. Ri na mashudu sa CGS ngauri a ro ngo xeledwa nga muthu nga nwambo wa COVID-19 uno nwaha. Kha vhashumisani vho fholaho kha malwadze zwa zwino, ri lavhelela u vha tšanganedza hafhu vha tshi vhuya.

Ndivhuwo dzo khetheaho kha mirado ya Bodo, nga fhasi ha vhurangaphanda ha mathakheni ha mudzulatshidulo, Vho Humphrey Mathe, kha u futelela, u ela nga vhusedzi ha mushumo, thikhedzo na nyendedzi nwaha wothe. Ri dovha ra livhuwa Komiti ya Phothifoljo ya Phalamennde kha Zwiko zwa Minerala na Fulufulu kha thikhedzo yayo, vhuđikumedzeli, vhlavhelesi na nyendedzi kathihi na Minisita na vhaofisiri vha Muhasho wa Zwiko zwa Minerala na Fulufulu.

Ndi dovha nga khunyeledza mbonalonyangaredzi yanga nga u dzhiela ntha uri ro fhaa mutheo wo kwhathaho wa CGS na u sedza kha ndisedzo, nahone ure tsumbo ya tshimiswa tsha muvhuso tsho konaho. Zwo tea u dovholola uri izwi zwo swikelelwa fhedzi ngauri ro ima kha mahađa a mihaga ine ya vha avho vho ri rangaho phanda.



Vho- M Mabuza
Muofisiri Muhulwane wa Masheleni
Khoro ya Saintsisi ya Vhupo
31 Fulwana 2021

3. TSHITAMENNDE TSHA VHUDIFHINDULELI NA KHWATHISEDZO YA VHURONWANE U ITELA MIVHIGO WA NWAHA NGA NWAHA

Zwo d̄isendeka nga ndivho yashu na zwine ra tenda, ri kwhathisedza zwi tevhelaho:

Mafhungo othe na tshivhalo tsho sumbedziswa kha muvhigo wa nwaha nga nwaha zwi a elana na zwitatamennde zwa masheleni zwo tolwaho nga Muṭolamuvhalelano Muhulwane.

Muvhigo muvhigo wa nwaha nga nwaha wo fhelela nahone, ndi wone a u na na zwiṅwe zwo siedzwaho.

Muvhigo wa nwaha nga nwaha wo lugiswa u ya nga ha nyendedzi dza mivhigo ya nwaha nga nwaha, sa zwe wa bviswa nga Gwama la Lushaka.

Zwitatamennde zwa Nwaha nga nwaha zwa Masheleni (Tshipiḁa tsha E) zwo dzudzanywa u ya nga ha maga a Maitele a Muvhalelano a Dzulelaho u Dzhielwa Nṱha (GRAP) ane a shuma kha tshiimiswa tsha nnyi na nnyi.

Bodo ya vha CGS i na vhuḁifhinduleli ha u lugisa zwitatamennde zwa masheleni zwa nwaha nga nwaha na khatulo dzi itwaho kha mafhungo aya.

Bodo ya vha CGS i na vhuḁifhinduleli ha u thoma na u shumisa sisiteme ya ndango dza nga ngomu yo sikwaho u itela u nekedza kwhathisedzo i pfadzaho kha tshirunzi na vhuḁisendeki ha mafhungo a kushumele, zwiko zwa vhathu na zwitatamennde zwa masheleni zwa nwaha nga nwaha.

Vhaṭolamuvhalelano vha nga nṅa vho tholwa u bula muhumbulo wo d̄iimisaho nga wothe kha zwitatamennde zwa masheleni zwa nwaha nga nwaha.

U ya nga ha kuhumbulele kwashu muvhigo wa nwaha nga nwaha u sumbedzisa zwavhuḁi, mashumele, kushumele, mafhungo, zwiko zwa vhathu na zwa masheleni zwa tshiimiswa tsha nnyi na nnyi kha nwaha wa muvhalelano wo fhelaho nga 31 Thafamuhwe 2021.

Wavho a fulufhedzeaho



Vho M Mabuza
Muofisiri Mulanguli Muhulwane
Khoro ya Saintsi ya Vhupo
31 Fulwana 2021



Vho H Mathe
Mudzulatshidulo
Bodo ya Khoro ya Saintsi dza Vhupo
31 Fulwana 2021

4. MBONALO YA TSHITIRATHEDZHI

Ndaela khulwane ya vha CGS i kha milayo ya u thomiwa hayo. Bono, tshipikwa na zwithu zwa ndeme zwa tshiimiswa zwi kona u bulwa sa zwe zwa dodombedzwa, kha Mulayo wa Saints ya Vhupo wa vhu 100 wa 1993, sa zwe wa khwiniswa nga hei ndila:

BONO

Bono la vha CGS ndi:

Tshitshavha tshi bvelelaho tsho shandukiswaho nga thasululo dza saints dza vhupo.

TSHIPIKWA

Tshipikwa tsha vha CGS ndi u dzhenelela kha Afrika Tshipembe li bvelelaho nga u:

- ekedza mapa yo t̄anganelanaho, ya sisītemethiki nahone ire na thero na u ita t̄hoḁisiso nga ngomu shangoni na kha phendelashango ya Afrika Tshipembe, sa zwe vha laedzwa, u:
 - Tshimbidza mveledziso ya minerala, fulufulu na zwa vhulimi;
 - Dzhenelera kha ndingo na ndangulo i sa nyethi ya minerala, zwa maḁi na vhupo na zwiko zwa vhupo na mupo;
 - Tikedza mveledziso ya themamveledziso.
- U shuma sa tshiimiswa tshieletshedzi tsha lushaka kha tshikafhadzo ya vhupo.
- U ḁekedza mafhungo nga ha pulatifomo ha zwiko na ndisedzo ine ya tshimbidza tsheo dzi iteaho na u swikelelea ha mafhungo o teaho nga vhashumisani vho teaho.
- U shuma u ya nga vhuḁifhinduleli hu na u tikedza tshanduko na vhuḁifhinduleli ha mveledziso ha lushaka.

ZWITHU ZWA NDEME

Zwithu zwa ndeme zwa tshiimiswa ndi:

- **Vhubveledzi:** U bveledza na u shumisa mihumbulo ya vhukuma na zwibveledzwa u sika ndeme.
- **Phambano:** U t̄anganedza mvelele ine ya katela vhoḁthe ine ya takula tshanduko na u dzhiela nḁha u dzhenelela ha vhashumisani vhoḁthe.
- **U vha wa maḁhakheni:** u lwela u vha wa maḁhakheni kha sia liḁwe na liḁwe la bindu.
- **Vhuḁifhinduleli:** U bveledza vhuḁisendeke na vhuḁikumedzeli, u vha vha vhuḁifhinduleli na vhuḁe.
- **U guda:** U bveledza ndivho nga kha u sika ndivho.
- **Tsireledzo, Mutakalo na Vhupo:** U dzhiela nḁha mutakalo na tsireledzo ya vhashumi na vhashumisani vhane vha baḁekanywa na u rangaphanda zwa vhupo.
- **U vha khagala:** U ḁekedza tshumelo hu si na u fhela mbilu, nga ndila i sa dzhii sia, ire na ndinganyiso nahone ire khagala.

5. NDAELA DZA THEO YA MULAYO

Mulayo wa Ndangulo ya Masheleni a Nnyi na Nnyi (PFMA) (Mulayo wa Vhu 1 wa 1999) u bula vha CGS sa Tshimiswa tsha Nnyi na Nnyi tsha Shedulu 3A.

Mulayo wa Saintsisi ya Vhupo (Mulayo wa Vhu 100 wa 1993) na Mulayo une wa tevhela wa Saintsisi ya Vhupo wo Khwiniswaho (Mulayo wa Vhu 16 wa 2010) wo thoma CGS. Ndaela ya vha CGS i katela:

- I. Nzudzanyo ya sisitemethiki ya nga ngomu shangoni na kha phendelashango ya saithi ya vhupo Afrika Tshipembe.
- II. U ita thodisiso dza saintsisi ya vhupo dzi elanaho na mveledziso ya thekhinikhala.
- III. Khuvhanganyo na nzudzanyo ya data yothe ya saintsisi ya vhupo na u shuma sa tshiko tsha saintsisi ya vhupo tsha lushaka.
- IV. U kuvhanganywa na mveledziso ya ndivho na mafhungo o tanganelanaho a saintsisi ya vhupo, a nga ho sa dzhiolodzhi, dzhifisikisi, dzhikhemisitiri, vhuinzhiniara ha dzhiolodzhi, dzhiolodzhi ya ikonomi, dzhiokhironolodzi, dzhiopalaeontolodzhi, sisiteme dza vhusefa madithavhela, tsedzuluso dza dzhithekhinikhala, zwa vhupo madini, dzhiomagnethizimu, seismołodzhi, khombo dza vhupo, dzhiolodzhi ya vhupo na mañwe masia a elanaho, hu si ane fhedzi.
- V. U divhadza Minisita nga mafhungo mawe na mañwe ane a elana na u bveledzwa ha zwa migodi na u bwiwa ha zwiko zwa minerala, zwine zwa nga shumiswa kana u vhuedza Riphabuliki.
- VI. U bveledza u todiwa ha na u tshinyadzwa ha minerala muñwe na muñwe kha Riphabuliki.
- VII. Ngudo ya (i) phadaladzo na lushaka lwa zwiko zwa minerala na (ii) zwiteña zwa vhupo na mupo zwa kale, zwa zwino na zwa matsheho zwa u tshinyadzwa ha minerala.
- VIII. U guda tshumiso ya nnda na ntha ha nnda ha mavu na fhasi kha lwanzhe, na u sedza nga ndila ya saintsisi ya vhupo na u eletshedza zwiimiswa zwa muvhuso na nnyi na nnyi nga ha tshumiso i pfadzaho nahone yo tsireledzeaho u itela mveledziso i sa nyethi.
- IX. U bveledza na u londota laiburari ya saintsisi ya vhupo, senthara ya mafhungo a saintsisi ya vhupo ya lushaka, dudu la ndeme la magwedzho a lushaka, saithi dza ndingo dza dzhiofisikhala na dza dzhiokhemikhala dza lushaka, miziamu wa saintsisi ya vhupo wa lushaka, netiweke ya lushaka ya seismołodzhi khala na tshileludzi tsha musaukanyo wa saintsisi ya vhupo tsha lushaka

- X. U ita tsenguluso na nekeda tshumelo dzo randelwaho dza makone kha zwiimiswa zwa nnyi na nnyi na zwa phuraivethe.
- XI. U nekeda tshumelo dza ndivho ya saintsisi ya vhupo na u eletshedza Muvhuso.

U ya nga ha tshanduko dzo itwaho kha Mulayo wa saintsisi dza khethekanyo 4(c), 4(eA), 4(f), 5(b) na 8 dzine dza sedza, vhuñe ha mafhungo a saintsisi dza vhupo, na zwiñwe, tsedzuluso na u elwa ha mivhigo ya dzhithekhinikhala, ndondolo ya zwiñwe zwileludzi zwa lushaka zwa saintsisi ya vhupo na tholwa na Komiti Khañhululo ya Dzhithekhinikhala zwo imiswa. Zwi tshi elana na izwi, Mulayo wa Mveledziso ya Minerala na Zwivhaswa (MPRDA) u nekedzwa uri vha CGS vha wane, u kala na phadaladza mafhungo a dzhiolodzhikhala u bva kha vhafarandugelo dza migodi vha kale na vhane vha khou bvelela sa tshipiða tsha u tevhedza thodea dza ndaulo. Tshanduko idzi dzi ndi tshipiða tsha ndavhelelo dza nyaluwo ya oganiki na u tandavhudza vhekuma ndaela ya vha CGS.

Ndaela ya mbekanyamaitele: Mbekanyamaitele ya Minerala na Migodi ya Afrika Tshipembe (1998) i khañhisedza CGS sa khoro ya saintsisi ine ya tikedza thodisiso na mveledziso dzo sedzaho mveledziso i sa nyethi kha ndowetshumo ya migodi. Hezwi zwi dovha zwa bula ndaela ya Ndayotewa, sa zwe ya sumbedziswa kha mañwalo matukusa a vha CGS. Iyi Pulane ya Tshithathedzhi ya vha CGS i bveledza ndaela khulwane ya mbekanyamaitele.

DZINWE NYENDEDZI DZA MBEKANYAMAITELE

Hu na u tavhanyedza ha u livhana na vhuñfihindleli ha lushaka, vha CGS vha khañhisedza u shuma na tshiedziswa tshavho na nyito dzavho dzi livhana na mvelelo dza lushaka dza tshithathedzhi dzi tevhelaho dzi tshi elana na Bono la Pulane ya Mveledziso ya Lushaka (NDP) 2030:

- **Mishumo yavhuði nga kha nyaluwo ya ikonomi nyangaredzi:** U engedza mbuelo ya zwiko zwa minerala kha shango nga u nekeda mafhungo na tshumelo dza saintsisi dza vhupo u itela u engedza themamveledziso ya tshiporo, maði na fulufulu;

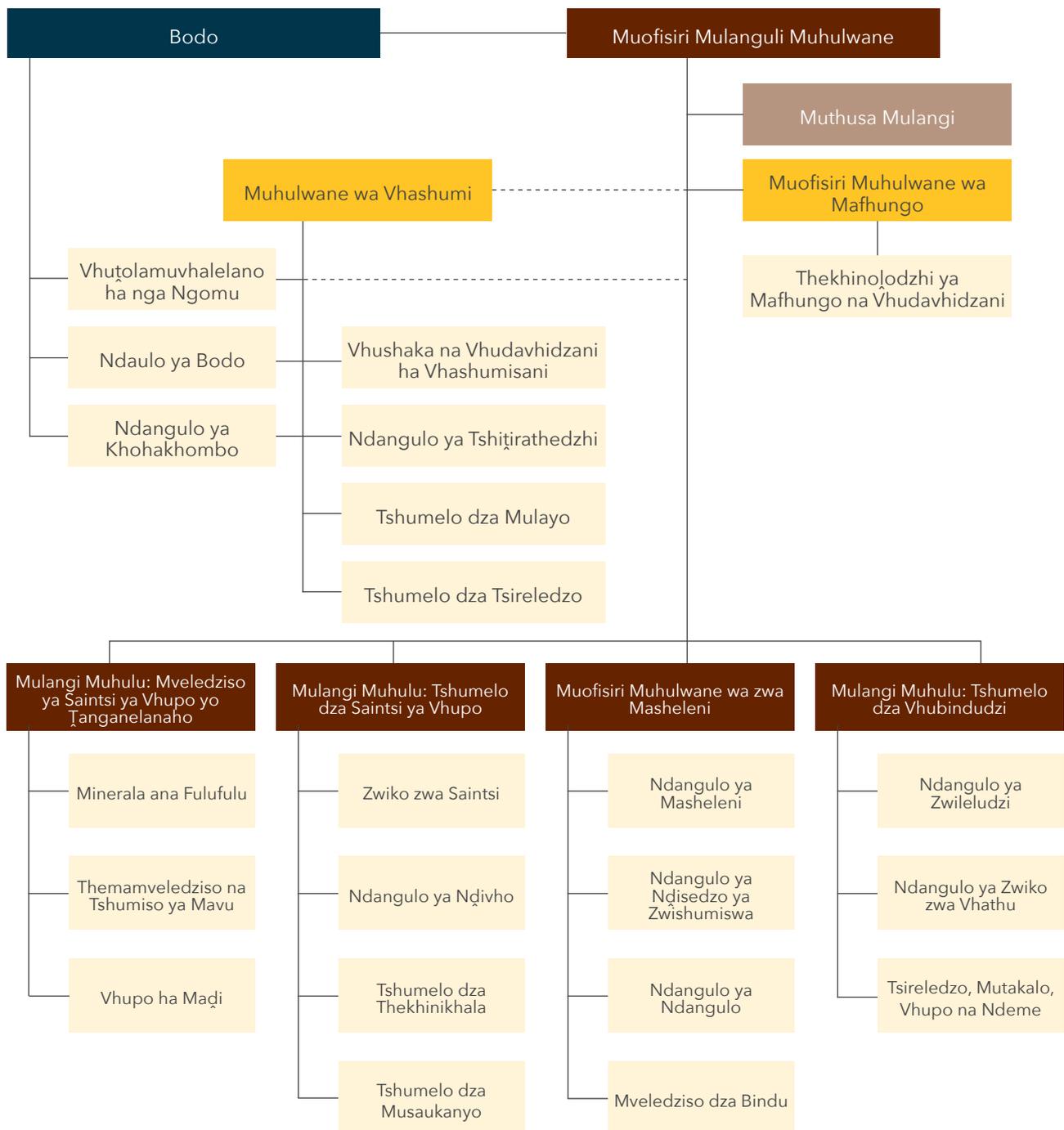
- **Vhashumi vha re na vhukoni na zwikili u tikedza nyaluwo nyangaredzi:** U fhaṭa vhukoni ha saintsi, ndaulo na zwikili zwa ndangulo/vhurangaphanḁa, na mveledziso ya zwibveledzwa, sisiteme na tshumelo;
- **Netiweke i pfadzaho, ya muṭaṭisani, i fhindulaho ya themamveledziso:** Mafhungo a saintsi ya vhupo na tshumelo dzi dzheniswaho kha mveledziso ya themamveledziso zwi dzhenelela kha ikonomi ya Afrika Tshipembe sa mveledziso ya zwiko zwa ikonomi ya malasha, gese, muḁagasi na maḁi;
- **Zwitshavha zwi imamaho, zwi re na ndinganyiso nahone zwi sa nyetḁhi hu na vhusireledzi ha zwiliwa ha vhoṭhe:** Thuso nga CGS kha mveledziso ya Afrika Tshipembe na vhathu vhaḁo nga kha themamveledziso yo khwiniswaho, migodi na vhuendelamashango ha vhupo;
- **Ndaka ya vhupo na zwiko zwa mupo zwo tsireledzwaho zwavhuḁi na u dzulela u khwaṭhiswa:** U ita ṭhoḁisiso kha muelelo wa mugodi wa esidi, tshanduko ya kilima na u thubiwa ha khaboni na thekhinoḁodzhi dza u vhulunga na
- **Mveledziso i bveledzaho na i pfadzaho yo sedzaho tshumelo ya nnyi na nnyi na vhadzulapo vho maandafhadzwaho na u katelwa vhoṭhe:** Mveledziso ya sisiteme dzi langaho dza vha CGS maelana na ṭhoḁea dza theo ya mulayo na ndaela dza lushaka dzine dza livhana na ndinganyiso ya mbeu na ndinganyiso ya mishumo (EE).

Zwiṁwe hafhu kha NDP na Muhanga wa Tshiṭirathedzhi wa Tshifhinga tsho Linganelaho (MTSF), zwipikwa zwa vha CGS zwo itwa u itela u tikedza zwipikwa zwa Muhasho wa Zwiko zwa Minerala na Fulufulu (DMRE), zwine vhudzivha hazwo ho sedza u bveledza mveledziso i sa nyetḁhi ya sekithara dza migodi, minerala na peṭiroḁiamu i gonyaho. Zwiṁwe zwipikwa zwa DMRE, hu na thikhedzo ya vha CGS nahone zwine nga khazwo nyito dzazwo dzi elana na, na u katela u shela mulenzhe kha mveledziso ya zwikili, u tshimbidza tshanduko kha sekithara dza migodi, minerala na fulufulu, kathihi na ṭhoḁisiso na mveledziso hu na thikhedzo ya vhuthomi ha ndingo dzi sa nyetḁhi. Vha CGS vha wana mutheo wa tshiṭirathedzhi u bva kha MTSF ya muvhuso ya 2019 u swika 2024, Mulevho wa Vhashumisani kha Tshiṭirathedzhi u itela Nyaluwo i sa Nyetḁhi na Tshanduko ya Nḁowetshumo ya Migodi ya Afrika Tshipembe kha DMRE, NA ya the DMRE, na Nḁivhadzamalayotibe ya Saintsi, Thekhinoḁodzhi, Vhubveledzi na Muhasho wa Saintsi na Vhubveledzi (DSI).

6. TSHIVHUMBEO TSHA TSHIIMISWA

Nzulele ya vhashumi vha CGS (Tshifanyiso tsha vuvhili) i tlatshedza tshivhumbeo tsha u vhiga tsha dzangano. Tshivhumbeo tsho bveledzwa u itela u tikedza u pfadza, u bveledza na u shuma nga nungo kha tshiimiswa na u sumbandila tshivhumbeo tsha Bodo ya Vhalanguli na vhalanguli vhahulwane. Thimu ya Vhalanguli vhahulwane ya CGS i rangaphanda nga Muofisiri Mulangi Muhulwane

(CEO) ane a vhiga kha vhulanguli ha muvhalelano (Bodo ya CGS – kha vha sedze Tshipiḽa tsha C kha muvhigo uyu). Thimu ya vhulanguli vhuhulwane, i dovha ya lavhelesa dziphothifoljo: Mveledziso ya Sainisi ya Vhupo yo Tanganelanaho, Tshumelo dza Sainisi ya Vhupo, Masheleni na Tshumelo dza Vhubindudzi (kha vha sedze Tshipiḽa tsha A Khethekanyo ya sumbe).



Tshifanyiso tsha 2. Tshivhumbeo tsha Tshiimiswa tsha CGS

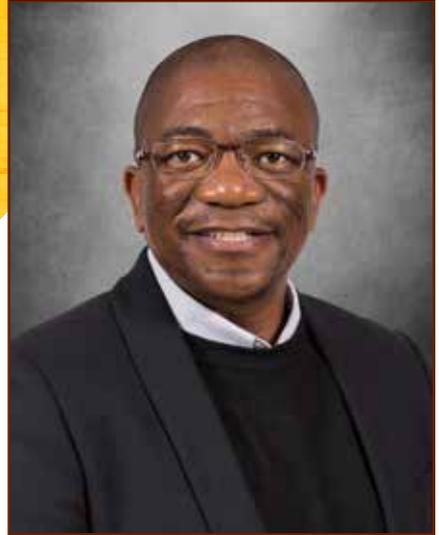
7. THIMU YA VHULANGULI HA CGS



MUOFISIRI MULANGULI MUHULWANE:
Vho Mosa Mabuza



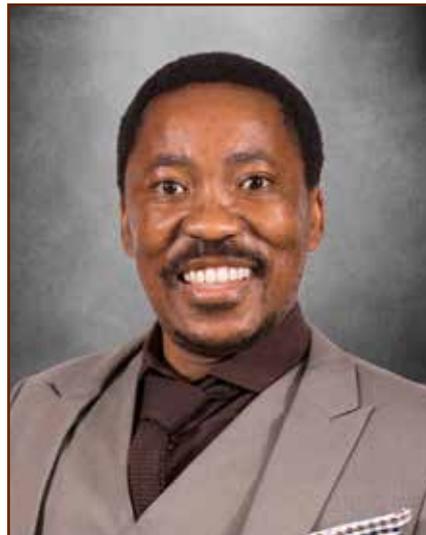
MINIDZHERE MULANGULI WA
TSHUMELO DZA SANTSI DZA VHUPO:
Vho Refilwe Shelembe



MINIDZHERE MULANGULI WA
MVELEDZISO DZA SAINTSI DZA VHUPO
DZO TANGANELANAHO:
Dr David Khoza



MUOFISIRI MUHULWANE WA ZWA
MASHELENI:
Vho Leonard Matsepe



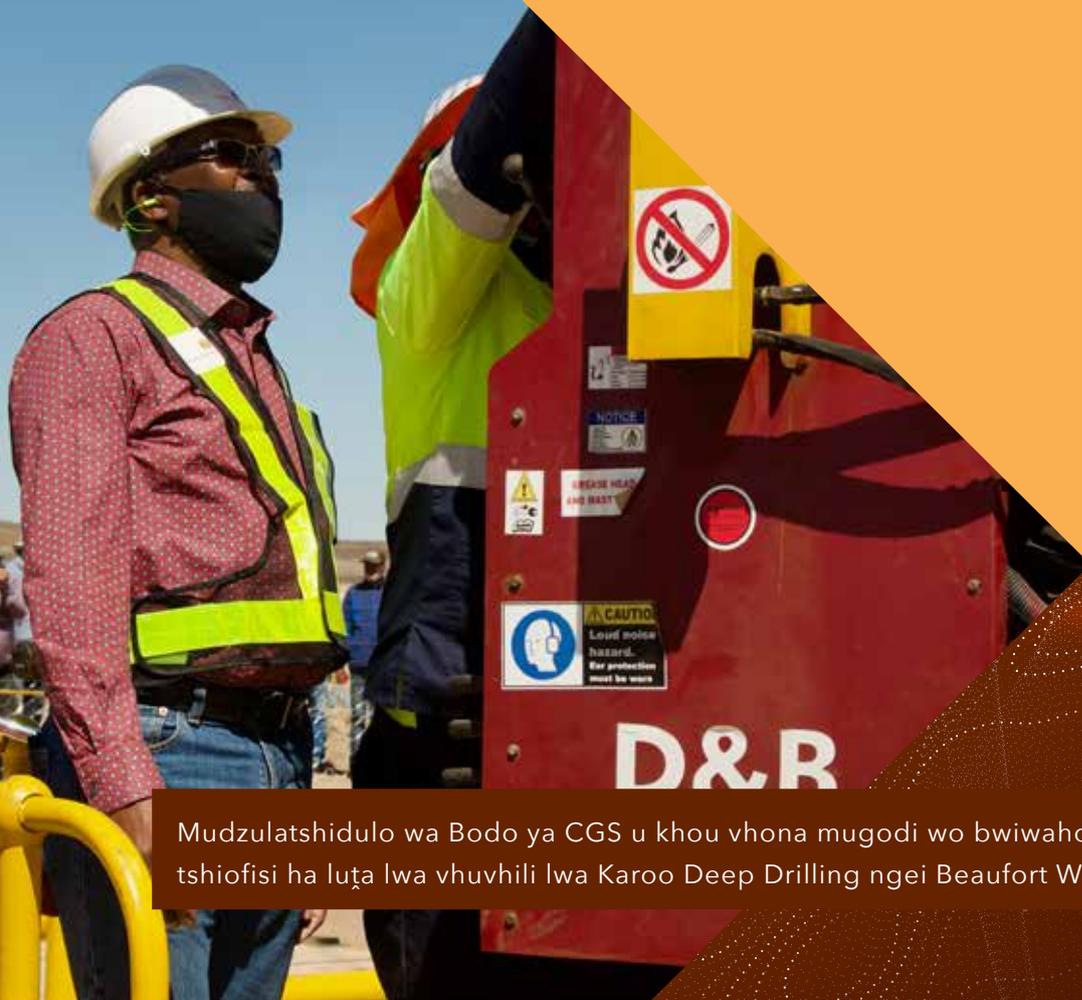
MINIDZHERE MULANGULI WA
TSHUMELO DZA VHUBINDUDZI:
Dr Jonty Tshipa

TSHIPIIDA TSHA B:

Mafhungo a Kushumele

Khethekanyo iyi ya muvhigo i nekedza mafhungo a ndeme a kushumele ane a sumbedza ndisedzo ya tshumelo na zwo swikelelwaho kha CGS. Mafhungo a kwhaṭhisedza u pfadza ha ndangulo ya tshiimiswa, vhupulani, mugaganyagwama, tshumiso, u ṭola na u elwa ha nyito. Masiandaitwa na mvelelo dza nyito dza tsho zwo ṭoka midzi kha vhupulani ha vhushaka na zwi itwaho nga ndangulo na nyito dza u swikelela mvelelo dzo lavhelelwaho.

Mafhungo a kushumele a kwhaṭhisedza u elana ha masiandaitwa na mvelelo kha pulane ya tshitiṛathedzhi, zwibveledzwa zwi elanaho zwa mbekanyamushumo, tsumbo dza zwibveledzwa na thagethe kha Pulane ya Kushumele ya Nwaha nga Nwaha (APP) na maṅwalwa a elanaho na mugaganyagwama o fhambanaho. Khethekanyo iyi i sumbedza zwo swikelelwaho ho sedza ndavhelelo na tsumbakushumele na thagethe dzi re kha pulane ya tshitiṛathedzhi, APP na maṅwalwa a mugaganyagwama.



Mudzulatshidulo wa Bodo ya CGS u khou vhona mugodi wo bwiwaho kha u rwelwaṭari ha tshiofisi ha luṭa lwa vhuvhili lwa Karoo Deep Drilling ngei Beaufort West.

1. MUVHUGO WA MUṬOLAMUVHALELANO MUHULWANE: ZWIPIKWA ZWO DZILAHO ZWO TOPOLWA

Muṭolamuvhalelano Muhulwane wa Afrika Tshipembe vho ita maga o teaho a u ṭola kha mafhungo a kushumele kwa CGS u itela u ṅekedza kwhaṭhisedzo i pfadzaho nga kha khunyeledzo ya vhuṭolamuvhalelano. Khunyeledzo ya vhuṭolamuvhalelano kha kushumele ho sedzwa zwipikwa zwo vheiwaho zwi re kha muvhigo u ya ho kha vhulanguli vhuṭolamuvhalelano na mawanwa zwi khou vhwigwa nga fhasi ha Zwipikwa zwo Dzilaho zwo vhwewa sa ṭhoho kha muvhigo nga ha ṭhoda dziṅwe dza mulayo na dza ndangulo kha khethekanyo yo teaho ya muvhigo wa muṭolamuvhalelano muhulwane.

Muvhigo wa Muṭolamuvhalelano Muhulwane, wo gandṣiwaho kha Tshipiḍa tsha E tsha Mafhungo a Masheleni, u kha siaṭari 138 u swika 141.

2. TSEDZULUSO YA NYIMELE

2.1 VHUPO HA NḐISEDZO YA TSHUMELO

Magumo a tshifhinga tsha u vhwiga a sumbedza ṅwaha wa vhuṅa wa tshumiso i sa gumi ya ḷiga iḷi ḷa zwino ḷa IMMMP sa tshishumiswa tsha nḑisedzo ya tshithathedzhi tsha u vusuludza CGS, tshine tsho nanga u sedza kha tshumiso ya ndaela yatsho, yo bulwaho kha Mulayo wa Santsi dza Vhupo, Mulayo wa Vhu 100 wa 1993 (wo khwiniswaho nga 2010). Izwi zwi katela khuvhanganyo, mveledzo, nzudzanyo, ṭhalutshedzo na phaḑaladzo ya data ya santsi ya vhupo ya nṱha ya santsi dza vhupo, mafhungo na nḑivho u itela Afrika Tshipembe. Vha IMMMP vho sedza kha zwithu zwiṭanu zwa ndeme zwo bulwaho afha fhasi na kha mavhalaanngwe a kushumele. Naho hu na khaedu dzi re hone dzo ḑaho na dwadzetshifu ḷa COVID-19, na mveledzwa dza u valwa ha shango ḷoṱhe, zwe zwa vha na masiandaitwa a si avhuḑi kha IMMMP, vha CGS vho ṅekedza vhunzhi ha thagethe dza COVID dzo dzudzanywaho kha ṅwaha une wa khou sedzuluswa.

- **Santsi ya vhupo u itela zwiko zwa minerala na fulufulu**

Muvhuso wa Afrika Tshipembe wo bula pukane yawo yo kwhaṭhaho ya u thuba gumoṱuku ḷa 5% ya mugaganyagwama wa tzedzuso wa dzhangho u anganyelwaho kha bilioni dza US\$10 nga ṅwaha kha miṅwaha miraru i tevhelaho u swika kha miṅwaha miṱanu. Vha CGS vho vha vha mashudu a u vha vharangaphanda vha u vusuludza na u humbulela hafhu mbono ya shango ya tzedzuluso ine ya elana na ndeme ya dzhioḷodzhi ine ya dzinginya uri shango ḷi dzula li tzedzuluso i ḑivheago. Nga u ralo, vha CGS vha dzhenelela kha vhurangelo ho vhalaho hu



Radzhioḷodzhi u khou kala u ṭhukhuwa ha fhethu ha Marshall Rocks-Pofadder, Thavhani dza Hallenberg, Sperrgebiet Namibia.

U dzhenelela ha vha CGS kha vhuṭsireledzi ha fulufulu na mbekanyamaitela ya 'The Just Energy Transition' zwi dzula kha thandela dzine dza vha tshipiḍa tsha Mbekanyamushumo ya Thekhinikhala ya Santsi ya Vhupo (GTP). Hedzi dzi katela mbekanyamushumo ya mvusuludzo ya fulufulu ḷi sa nyethi ya dzhiothemala kha tshifhinga tsho linganelaho u ya kha tshilapfu. Nṱhani ha midavhi ya malasha i si ya sialala i nga ho sa Indwe-Molteno Coalfields ngei Vundu la Eastern Cape i ḑisa tshikhala tsha vhukuma tsha u sedza mveledziso ya haiḑirodzheni na zwipiḑa zwi sa sokou wanala zwa ḷifhasi (REEs) u bva kha mveledziso ya zwiko zwa malasha, u ṭanganedza fulufulu ḷa mvusuludzo u fhungudza vhukuma khando dza khaboni.

Tshumiso ya mvelaphanda ya tshipiḁa itshi tsha mbekanyamushumo ya vha CGS ya thekinikhala naho i kha ḁiga ḁa u thoma, i fha fulufhelo ḁo linganaho ḁa nyaluwo ya ikonomi ine ya ḁoḁeesa, zwo ḁanganana na ḁhoḁea dza vhutsireledzi ha fulufulu ha shango, zwi nga ḁavhanyedziwa na u swikelelwa.

- **Saintsi ya mutakalo, maḁithavhela na vhupo:**

Nga ḁwambo wa ngeletshedzo ya vha CGS kha vha DMRE nga ha vhangaphanda ha vhupo, ho valwa migodi yo vuleaho miḁa i songo tsireledzeaho kha ḁwaha une wa khou sedzuluswa. Hezwi zwi isa kha u vala thandela ya u vala nga u vhona. Vha CGS vho dovha vha fhaḁulula thandela yavho ya D & O ya migodi u itela u sedza fhedzi kha ḁhoḁisiso dza masiandaitwa a migodi i si na vhaḁe kha tshitshavha na u eletshedza nyito dza ndulamiso. Izwi zwo konisa vha CGS u khwaḁhisa ḁhoḁisiso hu tshi katelwa u ḁola ho ḁanganelanaho (muya, mavu, maḁi nz) kha migodi ya vhufa, ndingo dza minerala u itela malaḁwa a migodi na u vusuludza ikonomi dzapo dza ḁivhazwakale ya ḁorobo dza migodi. Thandela ya maḁi a migodi yo khunyeledza u fhaḁiwa ha mugero wa Van Ryn Canal sa ḁiga ḁa ndaulo ḁa u dzhena, hu na mushumo musu wa ḁwaha une wa katela u sedza dzilafho ḁo dzikaho, u vha hone ha zwa migodi na mutshatshame wa zwi tshilaho nga luthihi.

Vha CGS vho bveledza mutshini wa vhubveledzi wa thekiniki dza u guda hu tshi shumiswa sethe dza data dza saintsi ya vhupo dza masia oḁhe na zwiko zwa maḁithavhela. Thekiniki idzi dzo ingiwa zwavhuḁi kha thandela ya Maluti-a-Phofung na u shumiswa sa saithi na u bwa tshisima tshine tsha vhuedza vhukuma kha zwitshavha zwapo.

- **Saintsi ya vhupo u itela themamveledziso na tshumiso ya mavu:**

Vha CGS vho ḁewa ndaela ya u bvela phanda na u dzudzanya fhethu hu re khomboni ya u nga wela, sa tombo ḁa dolomaithih. Ndivho iyi i shumiswa u eletshedza Muvhuso nga U ḁola mveledziso na khetho dza mveledziso na tshumiso ya mavu ya gumofulu. U hulela ha mbemba dza dolomaithi shangoni zwi tea u fhungudza nga kha magwedzho. Tshishumiswa tsha vhuḁali vhu si ha mupo (AI) tsho bveledzwa u itela u humbulela vhupo vhune ha nga bvelelwa nga dolomaithi. Mbekanyamushumo ya Lushaka ya Nzudzanyo dza Khombo dza Vhupo i sedza fhethu hune ha nga vha kha tshikalo tsha ḁorobo ha thusa

u dzudzanya tshikhala tsha masipala. Netiweke ya seisimiki ya lushaka i topola mithuthubo ine ya dzulela u bvelela lwa mupo na i vhangwaho nga migodi Afrika Tshipembe.

- **Vhubveledzi ha Saintsi ya vhupo:**

Vha CGS vha khou khwaḁhisedza nga zwiḁuku vhukoni ha vhubveledzi ha saintsi kha saintsi dza vhupo dzoḁhe. Zwiedziswa zwo bveledzwa u bva kha aḁigorithimu dza u guda nga mitshini u itela u bveledza vhukoni ha u humbulela vhupo ha khombo dza saintsi ya vhupo (fhethu hune ha nga wela), minerala, ḁowelo dza benthiki na nzudzanyo dza maḁi.

- **Saintsi ha vhuswaledzi:**

Sa Muḁwaleli wa tshoḁhe wa Dzangano ḁa Tsedzuluso dza zwa Vhupo Afrika (OAGS), vha CGS vha ḁuḁuwedza vhusaka ha tsini kha mashango a miraḁo ya Afrika kha ḁhoḁisiso dza Saintsi ya Vhupo. Vha OAGS vha imelela madzangalelo a tsedzuluso dza zwa vhupo Afrika na kha mashangoḁavha na u shumisana tshoḁhe na vha Tsedzuluso dza zwa Vhupo Yuropa u itela u shumisa mbekanyamushumo ya PanAfGEO kha u fhaḁa vhukoni u mona na dzhangano ḁa Afrika.

Vha CGS vho vusuludza tshumisano na vha tsedzuluso dza vhupo vha Namibia na Malawi u itela tshumiso ya thandela dza nzudzanyo ya dzhiḁodzhikhala dza ḁḁha. Vhubveledzi uvhu vhu katela vhugudisi na pfukiselo ya zwikili u itela mveledziso ya vhukoni ha vhatu.

- **Bindu ḁa vha CGS**

Vha CGS a vha shumisi fhedzi ndaela yavho, fhedzi vha ita tshumisano kha:

- Thandela dza zhendedzi dzi bvaho kha miḁwe mihasho ya mivhuso/zwiimiswa na zwiimiswa zwa nnyi na nnyi.
- Thandela dza sekithara dza phuraivethe.

Vha CGS vho bvela phanda na u shuma thandela dze vha laedzwa dzo bulwaho kha Mulayo wa Saintsi dza Vhupo, Mulayo wa Vhu 100 wa 1993 wo khwiniswaho (sa tsumbo mveledziso na ndondolo ya ḁaiburari ya lushaka ya ndeme, saithi ndaedzi dza dzhiḁofisikhala) u itela u langa:

- Netiweke ya seisimiki ya lushaka, ine ya ḁola nyito dza seisimiki fhano na u ḁumanya netiweke dza dzingu na dza dzhangano;

- U t̄ola nyito ya inifurasaundu ya dzhangho sa tshipiḁa tsha tshumisano yavo na Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO);
- Vha National Borehole Core Depository, ine ya ṅekedza khuvhanganyo nyangaredzi ya matheriala wa dzhioḁodzhikhala wa ndeme na u ḁihudza vhukoni ha u sikena ha haphasipekithirala;

Saintsi dza vhupo ndi muḁoḁo wa mveledziso ya vhathu

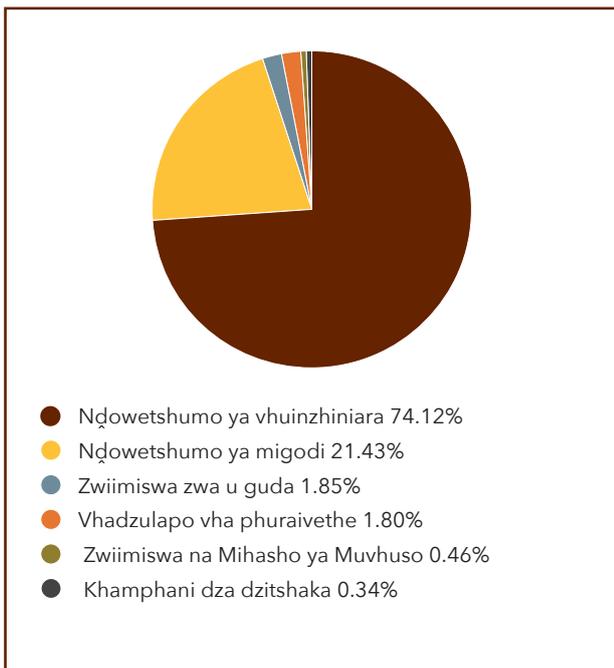
- Vha Muziamu wa Saintsi dza Vhupo wa lushaka vha ṅekedzaho na u vhulunga tsumbo dzi songo ḁowelea dza saintsi, dza ndeme na dza vhufa ha saintsi dza vhupo;
- Vha ḁaiburari dza Saintsi ya Vhupo ya Lushaka na vhengele ḁa dzibugu vhane vha ṅekedza khandiso dza dzhioḁodzhikhala na mimapa kha tshitshavha, na
- Tshileludzi tsha musaukanyo tsha saintsi ya vhupo tsha lushaka tshi re hone u saukanya, sambula dza dzhioḁodzhikhala, dza maḁi, matheriala a ṅowetshumo a songo shumiwaho na zwiṅwe.

2.2 VHUPO HA TSHIIMISWA

Musi wa ṅwaha une wa khou sedzuluswa, vha CGS vho dzudzanyulula tshivhumbeo tsha tshiimiswa (Tshifanyiso

tsha vuvhili) tshe tsha dovha tsha sedzuluswa hafhu u itela u elana na phothifoḁio dza bindu u itela u shumiswa ho khwiniswaho na ṅisedzo ya tshumelo u ya nga ha tshitiṅathedzhi tsho dzhiwaho. Hezwi zwo itelwa u swikelela mvelelo dza tshiimiswa dzine dza katela, tshumiso dzo khwaṅhisedzwaho dza zwibveledzwa zwa saintsi ya vhupo u itela ndangulo ya ṅdivho, zwine zwa engedza fhethu ha malo ha tshitiṅathedzhi ho sedzwaho. Ofisi ya mafhungo a Tshitshavha yo thomiwa u itela u tshimbidza phaḁaladzo ya data ya saintsi ya zwa vhupo na mafhungo u ya kha vhashumisani u ya nga ha Mbekanyamaitele ya Data na Mafhungo ya CGS.

Mafhungo na data zwi phaḁaladzwa u ya kha vhashumisani vho fhambanaho, hu tshi katelwa vhadzulapo vha phuraivethe, ṅowetshumo, mabindu a muvhuso, zwiimiswa zwa pfunzo zwa ṅṅha na mutheo na vhathu vha dzingu na vha mashangoḁavha vha re na dzangalelo. U bva Lambamai 2020 u swika ṅhafamuhwe 2021, vha CGS vho wana khumbelo dza 4 363 dza mivhigo ya dolomaithi, magwedzho, data ya dzhioḁodzhikhala ya magwedzho, mimapa ya dzhioḁodzhikhala, mimapa ya minerala ya dzhioḁodzhikhala na maṅwe mafhungo ane a nga sa data ya dzhiokhemikhala na ya dzhiofisikhala.



Tshifanyiso tsha vhuraru. Mbalombalo dza saintsi dza data dza saintsi dza vhupo na khumbelo dza mafhungo 2020/21

2.3 MVLELEDZISO DZA NDEME DZA MBEKHANYAMAITELE NA TSHANDUKO DZA THEO YA MULAYO

A hu ngo vha na mveledziso dza mbekanyamaitele dza ndeme kha Mulayo wo Khwiniswaho wa Saintsisi ya Vhupo wa 2010 u bva tshe wa vha hone nga la 1 Fulwana 2012. Mvetomveto ya Ndaulo dza Mulayo wa Saintsisi dza Vhupo dzi sumbedzisa kushumiselwe kwa mbetshelwa dza u maandafhadza kha Mulayo nahone dzo gandiswa u itela mabulamuhumbulo a nnyi na nnyi kha Gurannḁa ya Muvhuso nga Thafamuhwe 2021. Ndaulo dzo diimisela, sumbandila ndeme ya vhuḁe ha data ya saintsisi dza vhupo ya CGS, mafhungo na ndivho u ya nga ha theo ya mulayo ya mutheo. Nḁhani ha izwo, mbetshelwa ya u konisa vha CGS u ita zwa tsedzuluso i khou engedzwa u itela u wana ndila i sa nyethi ya tshiimiswa ya uri tshiimiswa tshi ite izwo hu na ndinganyiso ya tshumiso na vhuḁifhinduleli hatsho hoḁhe.

Mulayo wo Shandukiswaho wa Mveledziso ya Zwiko zwa Minerala na Peḁiroliamu (MPRDA) wa 2008 u bula mushumo wa vha CGS maelana na mafhungo a dzhiolodzhikhala o bveledzwaho nga kha u sedzulusa nyito dza Afrika Tshipembe. Zwi tshi elana na tshithirathedzhi tshiswa, vha CGS vha khou livhanya nyito na mveledziso dza zwinozwino kha tshanduko dza MPRDA, Mulayo wa Ndangulo ya Vhupo ya Lushaka na mulayo wa Nzudzanyo dza Tshikhala na Ndangulo ya Tshumiso ya Mavu.

Tshiedziswa tsha Mveledziso ya Tshithiriki (DDM) tshi lingedza u khwaḁhisedza vhukoni ha ndisedzo na vhukoni ha mimasipala. Kha sia ili, vha CGS vho diidzhenisa vhukuma kha nyambedzano na mimasipala ya zwiḁiriki kha Vundu la Limpopo, Eastern Cape na Kwa-Zulu Natal u itela u lingedza khonadzeo dza u dzhenelela ha saintsisi dza vhupo u swika kha gumofulu sa zwe zwa sumbedziswa kha DDM.

2.4 MVLEPHANḁA U YA TSWIKELELO YA ZWIBVELEDZWA NA MVELELO DZA TSHIIMISWA

Masiandaitwa a u valwa ha shango loḁhe u ya nga ha theo ya mulayo ya Ndangulo ya Zwiwo Afrika Tshipembe zwo bveledza ndeme ya tsedzuluso ya pulane dza tshiimiswa kha Muvhuso u khwaḁhisedza uri nzudzanyo dzavho dzi fhindula zwavhuḁi zwa dwadzeshifu la COVID-19, hu na ndinganyiso na

ndisedzo ya tshumelo i sa imi nga 2020/21. Ndi ngoho uri Pulane dza Tshithirathedzhi na dzi APP dzi nga sedzuluswa kha miḁwaha miḁanu, arali ha vha na tshanduko dza ndeme kha mbekanyamaitele, tshanduko kha vhupo ha ndisedzo ya tshumelo kana ngona ya nzudzanyo. Phindulo ya Afrika Tshipembe kha dwadze la COVID-19 zwo dzhenelela vhukuma kha tshanduko kha vhupo ha u shumela ha Muvhuso nahone tshanduko idzo dzi dovha dza kwama vhupo ha ndisedzo ya tshumelo. Vha CGS vho thoma vha vha vhekanya Pulane dza Tshithirathedzhi dza 2020-2025 na APP ya 2020/21 nga la 8 Shundunthule 2020 ngei Phalamendeni. Ho ḁo bviswa Phirisela 2 ya 2020 nga vha DPME nga la 20 Shundunthule u itela u ḁekedza nyendedzi nga ha ndovhololo na u ḁekedzwa hafhu ha Pulane dza Tshithirathedzhi dza 2020 - 2025 Pulane dza Tshithirathedzhi na APP ya 2020/21 u katela u dzhenela kha COVID-19 na u livhanyisa na nzudzanyo dzo khetheaho dza mugaganyagwama. Nḁhani ha izwo, phirisela yo bula uri ndovhololo dza kha APP ya 2020/21 APP na Pulane dza Tshithirathedzhi ya vhuvhili020 - 2025 (hune zwa ḁoḁea) zwi tea u elana na ḁoḁea dza gumoḁuku dza fomethe na zwipiḁa zwa ndeme zwa Muhanga wo dovhololwaho u itela pulane dza tshithirathedzhi na pulane dza kushumele dza ḁwaha nga ḁwaha (2019), zwe zwa fheliswa u itela u bveledza vesheni ya 2020. Pulane ya Tshithirathedzhi ya vha CGS ya 2020 - 2025 na APP 2020/21 zwo ḁo dovhololwa u itela u katela u dzhenela kha COVID-19 kathihi na u livhanya na ḁoḁea dza gumoḁuku dza fomethe na zwipiḁa zwa ndeme u itela Muhanga wo Dovhololwaho wa Pulane ya Tshithirathedzhi na Pulane ya Kushumele ya ḁwaha (2020).

Tshitamennde tsha masiandaitwa tsha vha CGS tsho bviswa kha tshitamennde tsha tshipikwa 'Tshitshavha tsho bvelelaho tshi shandukiswaho na thasululo dza saintsisi ya zwa vhupo', vha CGS vho IMMP sa tshithirathedzhi tsha u bveledza u sa nyetha ha tshiimiswa tshine tsha dzulela u shanduka kha tshiimo tsha tshiimo, ikononi, tshitshavha na mbono ya shango ine ya dzulela u sudzuluwa lwa saintsisi na lwa thekholodzhikhala. Tshithirathedzhi tshi ho diimisela u londota ndisedzo i re na masiandaitwa ya ndaela ya ndeme. Tshifanyiso tsha vhuḁa tshi sumbedza ndila ire na mutsindo ya tshithirathedzhi tsha vha CGS, mvelelo na fhethu hu re na masiandaitwa.



Tshifanyiso tsha vhuṅa. Mbonalo ya tshitirathedzhi na nḡila ya masiandaitwa ya vha CGS

Thebulu ya 1 i sumbedza mvelaphanda u ya kha u swikelela thagethe ya minwaha miṭanu ho sedzwa tsumbamvelelo dza Pulane ya Tshīrathedzhi ya vha CGS 2020 - 2025

Thebulu ya 1. Mvelaphanda u ya kha u swikelela pulane ya tshīrathedzhi ya vha CGS

Mvelelo	Tsumbamvelelo	Mutheo	Thagethe ya minwaha miṭanu	Mve-laphanda nga la 31 Thafamuh-we 2021
Zwa ndeme zwa MTSF	Tsha ndeme tsha 1: Muvhuso u konaho, wa mikhwa nahone une wa khou bvelela			
Ndangulo i pfaḏzaho na i shumaho ya zwiko zwa masheleni	Nomboro dza vhuṭolamuvhalelano vhu si na mbudziso	0	0	0
U tevhedza phurothokholo/ndaulo dza kuvhusele				
Zwa ndeme zwa MTSF	Tsha ndeme tsha 3: Pfunzo, zwikili na mutakalo			
Vhashumi vha re na vhukoni	Phesenthe ya vhashumi vha saintsivi vha re na Digirii dza Masiṭasi na dza Vhudokotela	Tsumbo ntswa	≥35%	40.47%
	Phesenthe dza zwibviswa zwa vhugudisi vhune ha badelwa u bva kha mutevhe wa miholo	1.46%	≥1%	1.20%
Zwa ndeme zwa MTSF	Tsha ndeme tsha 2:Tshanduko ya Ikonomi na u sika mishumo Tsha ndeme tsha 5: Thanganelano ya vhupo, vhudzulo ha vhatu na muvhuso wapo Tsha ndeme tsha 6: Tshumisano ya tshishavha na zwitshavha zwo tsireledzeaho			
Tshumiso dzo kwhaṭhisedzwaho dza zwibveledzwa zwa saintsivi ya vhupo na u thubiwa ha 5% ya mukovhe wa dzhangwa zwa zwibviswa zwa tzedzuluso	Vhukateli ha mapa wa saintsivi dza vhupo wa nga ngomu shangoni	Tsumbo ntswa	16%	9.03%
	Vhukateli ha mapa wa saintsivi dza vhupo wa kha phendelashango	Tsumbo ntswa	0.6%	0.05%
	Zwibveledzwa zwa saintsivi ya vhupo zwa minerala ana fulufulu	Tsumbo ntswa	22	7
	Zwibveledzwa zwa saintsivi ya vhupo u itela themamveledziso, tshumiso ya mavu, mutakalo, maḏiṭhahvela na vhupo	Tsumbo ntswa	26	10
U khwinisa mafulo a pfunzavhune, tshumelo na zwibveledzwa zwa CGS	Levele ya u fushea ha vhashumisani	64.9%	≥70%	88.48%
Ndangulo ya ndivho yo khwiniswaho	Nomboro ya tshikili dzo sedzuluswa dza gandiswa	26	160	66
Zwa ndeme zwa MTSF	Priority 7: A better Africa and world			
Vhuswaledzi ha saintsivi dza vhupo ho khwiniswaho	Nomboro dza tshumisano dza tshīrathedzhi dza dzitshaka dzo thomiwaho	Tsumbo ntswa	4	1

U itela u swikelela mvelelo kha ndangulo ya zwiko zwa masheleni kha zwi pfaḏzaho na zwi shumaho kathihi na u sa hanedzwa ha mivhigo wa muṭolamuvhalelano, vha CGS vha ḏo bvela phanda na u bveledza na u londota sisiteme dzi re khagala, u vhea ndango dza nga ngomu na u langa khohakhombo dzine dza nga vha hone. Vha CGS vha ḏo bvela phanda na u lwela u wana muvhigo u si na mbudziso na u wa vhuṭolamuvhalelano ho kunaho u swika na nga 2025. Zwitatamennde zwa masheleni zwi ḏo bvela phanda na u lugiswa maelana

na maga a GRAP na ṭhoḏea dza Mulayo wa Ndangulo ya Masheleni a Nnyi a Nnyi (PFMA). Ndango dzo no ḏi (PFMA). Ndango dzo no ḏi thoma u shumiswa u kwhaṭhisedza ndangulo ire na vhuḏifhinduleli ya ndaka, mbuelo, zwibviswa na vhuḏifhinduleli. Mushumo wa ndangulo ya ndisedzo ya tshumelo wo thomiwa u itela u kwhaṭhisedza thengo yo teaho na sisiteme dza mbetshelwa dzine dza sa dzhie sia, dzi re na ndinganyiso, dzi re khagala, dzi re na muṭaṭisano na u sa ḏura. Nga kha vhuṭolamuvhalelano ha nga ngomu

na mishumo ya ndangulo ya khohakhombo, vha CGS VHA tola u shuma ha ndango dza nga ngomu, u ela ndango dza ndangulo dza masheleni na u thivhela vhuḍifari vhu si havhuḍi ha zwa masheleni sa vuhfura, vuhvava, zwibviswa zwi si zwavhuḍi na zwibviswa zwi si na mbuelo. U tevhedza phurothokholo dza kuvhusele na zwiḥwe zwo randelwaho ndi zwa ndeme uri vha CGS vha dzhenelele kha u swikelela Tshithu tsha ndeme tsha 1 tsha MTSF, tshi re 'muvhuso une wa kona, u re na vhuḍifari nahone u bvelelaho'. U itela u swikelela levele i tḡanganedzeaho ya u tevhedza, vha CGS vha pika u khwinifhadza na u Bveledza mbibvelo dza ndangulo ya u tevhedza nga u vhekanya mbekanyamaitele na maitele a u swikelela thagethe dza tshiiḡiswa tshine tsha tevhedza tshoṡhe nga 2025. Vha CGS vha shuma kha vhupo ho serekanaho, ho fhambanaho na ho tḡandavhuwaho na lḡifhasi lḡa ndaulo, na u tea u tevhedza zwo randelwaho zwo vhalaho. U tevhedza ho swikelelwa nga ndḡila yo dzudzanyeaho na ya sistemetheki yo tḡanganelanaho kha mashumele. Hezwi zwi ḡo bveledza hafhu u kwhaṡhisedza uri vha CGS vha swikelela vhuṡtolamvhalalano vhu si na mbudziso nga 2025.

Zwivhuya zwa muṡatḡisano zwi dzula kha vhukoni ha vhashumi. U kunga na u dzudza, u shumisa na u bveledza mpho ya vhukuma kha zwiimo zwone, CGS yo bveledza muhanga wa ndangulo ya mpho u itela u fhaṡa, u londota na u vhulunga vhashumi vha konaho mafheloni a tshikhala tsha MTSF. Muhanga u fhindula tḡoḡea dza tshifhinga tshipfufhi, tsho linganelaho na tshilapfu tsha bindu zwi tshi laedzwa nga nzudzanyo dza vhashumi.

Tshḡirathedzhi tsha IMMP tsho sedza u dzhenelela kha Mvusuludzo dza lkonomi ya Afrika Tshipembe na Pulane ya Mvusuludzo ya lkonomi nga u wana gumoṡuku lḡa 5% ya tzedzuluso dza dzhango nga kha mafhungo na ndḡivo ya saintsi dza vhupo zwo bveledzwo u bva kha mbekanyamushumo. Tshumiso ya GTP, tshishumiswa tsha ndeme tsha u swikelela tshḡirathedzhi tsha vha CGS, tsho ḡiimisela u vula vhukoni ha zwiko zwa minerala na fululu Afrika Tshipembe na u dzhenelela kha "Just Transition" u ya kha ikonomi ya khaboni ya fhasi. GTP i ḡo dovha ya ḡekedza data ya ndeme na mafhungo (nga kha mveledziso ya mapa ya saintsi ya vhupo nnda na kha phendelashango kha tshikalo tsha 1:50 000-), hu tshi katelwa tshumiso ya Thekiniki dza AI u tikedza mveledziso ya themamveledziso i sa nyetḡhi, tshumiso ya mavu ire na vhulondo na vhurangaphandḡa ha vhupo. Musi wa ḡwaha une wa khou sedzuluswa mapa ya saintsi dza vhupo ya vhupo nnda na kha phendelashango yo bveledzwa kha tshikalo tsha 1:50 000, zwe zwa bveledzwa u engedzea u ya kha

9.03% ha vhuḡateli ha mapa ya vhupo nnda, zwe zwa sumbedza u khwinisea hu mangadzaho u bva fhasi ha 5% phandḡa ha u thoma ha IMMP.

U itela u khwinisa tshenzhemo ya tshumelo na zwibveledzwa zwa CGS, ho tendelwa tshḡirathedzhi tsha vhudavidzani na vhushaka ha vhashumisani tsho tḡanganelanaho kha ḡwaha une wa khou sedzuluswa. Vha CGS vho thoma u shumisa tshḡirathedzhi u tola nyaluwo ya pfungavhuḡe yavho nga kha zwishumiswa zwi nga ho sa tzedzuluso dza vhashumisani.

Sa vhafari vha lushaka vha data ya saintsi ya vhupo na mafhungo, vha CGS vho thoma na zwa u ḡekedza sisteme dza ndangulo ya mafhungo nga saintsi dza vhupo dzine dza ḡo tendela u dzhia tsho hu pfadzaho u itela ndangulo i sa nyetḡhi u itela ndangulo i sa nyetḡhi ya zwiko zwa mupo na u fhungudza masiandaitwa a khombo dza vhupo, na zwiḥwe. Tshumiso ya gumofulu ya sisteme dza ndangulo ya mafhungo i ḡo konisa tshiiḡiswa ushumisa data ya saintsi ya vhupo na mbekanyamaitele ya vhupo khathihi na u wana mabulamuhumbulo a tshishavha musu wa ḡwaha une wa khou sedzuluswa.

Vha CGS vho pika u kwhaṡhisa tshumiso ya vhupo ha thero dza vhuswaledzi ha saintsi ya vhupo sa tshipiḡa tsha u shumisa ha makumedzwa na mbekanyamaitele ya lushaka ya mashangoḡavha u bveledza vhuswaledzi ha ikonomi na u tikedza mbekanyamushumo dzo sedzaho u dzhenelela ha Afrika Tshipembe kha u fhaṡa Afrika lḡa khwine na lḡifhasi, lḡi elanaho na zwipikwa zwa Mveledziso i sa Nyetḡhi ya Mashango a Mulanganelo wa 2030 na Adzhenda ya Tḡanganelano ya Afrika ya 2063. Mbekanyamaitele ya saintsi dza vhupo i katela zwiḡnwa zwa mveledziso ya vhukoni ha vathu, mvusuludzo ya lushaka, zwa ndaulo na zwa vhulangi/vhurangaphandḡa, mveledziso ya zwikili na tshumiso ya mbekanyamushumo dzine dza tendelwa nga vhoṡhe kha ḡwaha une wa khou sedzuluswa. Vha CGS vha na thendelano na vha Ofisi ya Tḡoḡisiso dza Dzhioḡodzhikhala na zwa Migodi (ORGEM) ya Riphabuḡiki ya Vhukati ya Afrika (CAR), sa tshipiḡa tsha tshumiso ya ndḡila dza memorandumu wa 2017 vhukati ha muvhuso wa CAR na wa Afrika Tshipembe. Thendelano i tama u bveledza vhushaka ha tshumisano vhukati ha mashango mavhili kha zwa saintsi dza vhupo na, u kwhaṡhisa vhuswaledzi ha ikonomi. Vha CGS vho dovha vha tikedza khamphani ya migodi ya muvhuso ya Afrika Tshipembe, vhurumelwa ha AEMFC na ha CAR vhu re na Mulangi Muhulu wa Migodi phothifoḡo ya Migodi na Fulufulu ya CAR.

3. MAFHUNGO A KUSHUMELE KWA MBEKANYAUSHUMO YA CGS

Maelana na tshīrathedzhi tsha vha CGS, ngona ya tshikoro tshi re na ndinganyiso (BSC) i a shumiswa u nekedza vhuḍifhinduleli ha kushumele nyangaredzi kwa tshiimiswa. Vha BSC vha kala kushumele kha ḷevele ya bindu na kha ḷevele ya muthu nga muthihi. Hu na mbekanyamushumo dza tshīrathedzhi dzi si gathi dzine dza katela murengi, maitete a bindu a

nga ngomu, u guda na nyaluwo ya kuvhonele kwa masheleni

(Tshifanyiso tsha vhuḷanu). Mbekanyamushumo idzi dzi fhindula mvelelo dza tshiimiswa nahone dzi elana na zwithu zwa MTSF ya muvhuso.

Tshitamennde tsha Sainisi ya Vhupo: Tshitshavha tsho bvelelaho na u shandukiswa zwi tshi koniswa nga thasululo dza sainisi dza vhupo	Mbekanyamushumo dza CGS	Mvelelo dza CGS	Phindulo ya CGS ya Tshīrathedzhi zwithu zwa ndeme zwa MTSF	Tshikoro tsha Bindu tsha CGS	
	1	U sa Nyetha ha zwa Masheleni	1. Ndangulo ya zwiko zwa masheleni zwi shumaho na zwi pfadzaho	1. Tshiimo tshi konaho, tshi re na mikhwa tshi bvelelaho	Kuvhonele kwa Ikonomi/ Masheleni na Nyaluwo
	2	Kushumele na u Pfadza ha Tshiimiswa	2. U tevhedza		Sisiteme dzi Shumah Kuvhonele (kwa Tshiimiswa)
	3	Vhashumi vho Maandafhadzwaho, U shandukiswa, U ṭuṭuwedzwa na U vha na vhukoni	3. Vhashumi vha konaho		3. Pfunzo, zwikili na mutakalo
	4	Nḍisedzo ya Ndaela	4. Tshumiso yo Khwaṭhiswaho ya mafhungo na ndīvho ya sainisi ya vhupo u itela u wana gumoṭuku ḷa 5% ya mukovhe wa zwibviswa zwa tsedzuluso ya dzhangano 5. Vhuswaledzi ho khwaṭhiswaho ha sainisi ya vhupo	2. Tshanduko ya ikonomi na u sikwa ha mishumo 5. ṭhanganelano ya tshikhala, vhudzulo ha vhathu na muvhuso wapo 6. Vhuthihi ha khwine ha matshilisano na zwitshavha zwo tsiredzedzeho	Kuvhonele kwa Maraga (Vhashumisani/ Vharengi)
	5	Vhukwamani ha Ngeletshedzo, Vhashumisani na Ndangulo ya Nḍivho	6. Tshenzhemo ya khwine ya pfungavhuṇe, tshumelo na zwibveledzwa zwa vha CGS 7. Vhupo ha sainisi ya vhupo ho khwiniswaho nga kha ndangulo ya ndīvho i pfadzaho	7. Afrika ḷa khwine na ḷifhasi	

Tshifanyiso tsha vhuḷanu. Mbekanyamushumo dza CGS dzo nweledzwaho na zwithu zwa ndeme zwa MTSF 2019 u swika 2024 tshikoro tsha vhubindudzi

Mafhungo a kushumele a dovha a dodombedza vhupo ha nḍisedzo ya tshumelo ya dzangano, masia nga u angaredza a nḍisedzo ya tshumelo, na vharengi na vhashumisani vhane vha shumelwa. U itela u elana kushumele kwa vha CGS tshiimiswa tsho bveledza tsumbakushumele, dzine dzo ṭangana na thagethe dza kushumele dza 2020/21, dzo nweledzwa kha Thebulu ya vhuvhili.

3.1. TSHIKORO TSHA BINDU TSHA 2020/21
Tshiimo tsha tshiwo tsha lushaka na u valwa ha shango loṭhe ḷa Afrika Tshipembe ndi u dzhenelela ha muvhuso wo ḷiimisela u fhungudza masiandaitwa a COVID-19 kha lushaka. Hezwi zwo ṭoda uri muvhuso u sedzuluse pulane dzawo u khwaṭhisedza phindulo ya tshihaḍu kha dwadzetshifu ḷa COVID-19 na u bvela phanḍa na nḍisedzo ya tshumelo nga

2020/21. Zwenezwo, Pulane ya Tshitiirathedzhi ya vha CGS ya 2020 u swika 2025 na APP ya 2020/21 yo thomaho u vhekanywa nga Ja 8 Shundunthule 2020 yo sedzuluswa na u vhekanya hafhu nga 8 Fulwana 20202 u katela u dzhenelela kha dwadze tshifu Ja COVID-19 na u livhana na thodea dza gumotuku dza fomethe na zwipiḁa zwa ndeme zwa Muhanga wo Vusuludzwaho wa Pulane dza Tshitiirathedzhi na Pulane dza Kushumele dza Nwaha nga Nwaha(2020) u ya nga ha nyendedzi dza Phirisela ya vhuvhili ya 2020 yo bviswaho nga vha DPME.

Thebulu ya 2 ire afha fhasi i sumbedza zwo swikelelwaho zwi tshi vhambadzwa na mafhungo a kushumele o sumbedzwaho kha APP (izwi re APP yo nekedzwaho nga Ja 8 Shundunthule 2020) u swika datumu ya u nekedzwa hafhu. Zwa vhukuma zwo swikelelwaho zwi imela kushumele kwa kotara ya u

thoma ya 2020/21 (Lambamai 2020 u swika Fulwi 2020) hu si zwo swikelelwaho kha nwaha wothe. Ndi zwa ndeme u dzhiela ntha uri APP ya u thoma yo vha yo disendeka nga muhanga wa pulane dza tshitiirathedzhi na APP ya 2010, ye ya vha i khou shuma musu wa u nekedzwa ha u thoma. U ya nga ha mvelelo, zwibveledzwa na tsumbazwibveledzwa mitalukanyo yo vha i sa shumi. U itela u kona u shumisea zwavhudi, maga a kushumele kana tsumbakushumele dza ndeme na vhubveledzi ha tshitiirathedzhi u bva kha APP ya u thoma zwo nekedza afha fhasi sa tsumbakushumele a u itela ndivho ya mbekanyamushumo. Thebulu ya 3 i sumbedza zwo swikelelwaho zwa vhukuma sa zwe zwa sumbedzwa kha APP ya u fhedzisela 2020/21 na zwo swikelelwaho u itela nwaha ya muvhalelano 2020/21.



Photomikhirogirafu ya phikhirithiki olivini gaburonoraithi, Boomrivier Ni-Cr tsini na Kenhardt

Thebulu ya 2. Tshikoro tsha bindu tsha APP ya u thoma ya 2020/2021 u swika datumu ya u nkedzwa hafhu (Zwi shuma u bva 01 Lambamai 2020 u swika 8 Fulwana 2020 – Kotara ya u Thoma ya u Thoma ya FY2020/21)

Kuvhonele kwa Nyaluwo ya Ikonomi/Masheleni									
Mbekanyamushumo ya 1: U sa nyetha ha masheleni									
Ndiho: U kala kushumele na u pfadza na ndisedzo ya tshumelo dza ndangulo ya masheleni, u khwaṭhisedza uri ndambedzo a i tambiswi u bva kha nyito dza tshumisano na vhusumisani na u bveledza ndambedzo ya mphomali									
Mvelelo dza tshimiswa dza mbekanyamushumo 1: N/A									
Mvelelo	Mveledzwa	Tsumbam-veledzwa	Kushumele kwa vhukuma kwo toliwaho kha n'waha wa muvhalelano wa 2018/19	Kushumele kwa vhukuma kwo toliwaho kha n'waha wa muvhalelano wa 2019/20	Thagethe ya vhukuma yo pulaniwaho wa 2020/21	Yo swikelelwaho ya vhukuma kha n'waha wa muvhalelano wa 2020/21 u swika kha datumu ya u nkedzwa hafhu	Vhupambuwi u bva zwo thagethe dzo pulaniwaho na dzo swikelelwaho wa 2020/21	Zwiitisi zwa u pambuwa	Zwiitisi zwa ndovhololo dza Mveledza/Tsumbamveledzwa/Thagethe dza Nwaha nga Nwaha
N/A	N/A	Phesenthe ya mbadelo dza u shuma u ya kha thanganyelo ya mbadelo	Liga liswas-ure	61.04%	≤55%	58.69%	+3.69%	Thagethe a dzo ngo swikelelea nga n'wambo wa COVID-19 na u valwa ha shango zwe zwa vhangani thandela dzi elanaho na GDP dzi sa itwe saizwi hu tshi tea u bvelwa nnda.	Phesenthe ya mbadelo dza u shuma u ya kha mbadelo dzothe ya ≤55% yo sedzuluswa u ya kha Phesenthe ya mbadelo dza u shuma u ya kha mbadelo dzothe ya ≤66%. Zwiitisi ho vha nga n'wambo wa COVID-19, Thandela dzi elanaho na GDP dzi sa itwe saizwi hu tshi tea u bvelwa nnda.
									Nga mulandu wa tshanduko kha ngona dza vhupulani zwo sumbedziswaho kha Phirisela ya vhuvhili ya 2020 yo bviswaho nga DPME, themphuleithi ya Pulane ya Tshithathedzhi ya vhukuma yo nkedzwa 2020- 2025 na APP ya n'waha wa muvhalelano wa 2020/21 zwo sedzuluswa u itela u elana na thodea dza gumotuku dza Munga wo Dovhololwaho pulane dza tshithathedzhi ya 2020.

Kuvhonele kwa Nyaluwo ya Ikonomi/Mashelani									
Mbekanyamushumo ya 1: U sa nyetha ha mashelani									
Ndivho: U kala kushumele na u pfaeza na ndisedzo ya tshumelo dza ndangulo ya mashelani, u khwatshedza uri ndambedzo a i tambiswi u bva kha nyito dza tshumisano na vhushumisani na u bveledza ndambedzo ya mphomali									
Mvelelo dza tshiimiswa dza mbekanyamushumo 1: N/A									
Mvelelo	Mveledzwa	Tsumbam-veledzwa	Kushumele kwa vhukuma kwo toliwaho kha n'waha wa muvhalelano wa 2018/19	Kushumele kwa vhukuma kwo toliwaho kha n'waha wa muvhalelano wa 2019/20	Thagethe ya vhukuma yo pulaniwaho wa 2020/21	Yo swikelelwaho ya vhukuma kha n'waha wa muvhalelano wa 2020/21 u swika kha datumu ya u nekedzwa hafhu	Vhupambuwi u bva zwo thagethe dzo pulaniwaho na dzo swikelelwaho wa 2020/21	Zwiitisi zwa u pambuwa	Zwiitisi zwa ndovhololo dza Mveledza/Tsumbamveledzwa/Thagethe dza Nwaha nga Nwaha
N/A	Phesenthe ya mbadelo dza vhaofisiri i tshi vhambedzwa na mbadelo dzothe	Liga liswa	65.86%	≤60%	77.26%	+17.26%	Thagethe a dzo ngo swikelelea nga n'wambo wa COVID-19 na u valwa ha shango zwe zwa vhangani thandela dzi elanaho na GTP dzi sa itwe saizwi hu tshi tea u bvelwa nnda. Ho sedzeswa kha thandela na pulane dza mveledziso ya mvusuludzo ya ikonomi.	Phesenthe ya mbadelo dza vhaofisiri i tshi vhambedzwa na mbadelo dzothe thagethe ya ≤60% yo sedzuluswa u ya kha Phesenthe ya mbadelo dza vhaofisiri i tshi vhambedzwa na mbadelo dzothe thagethe ya ≤70%. Zwiitisi ho vha nga n'wambo wa COVID-19, Thandela dzi elanaho na GTP dzi sa itwe saizwi hu tshi tea u bvelwa nnda.	Nga mulandu wa tshanduko kha ngona dza vhupulani zwo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, themphuleithi ya Pulane ya Tshitirathedzhi ya vhukuma yo nekedzwa 2020-2025 na APP ya n'waha wa muvhalelano wa 2020/21 zwo sedzuluswa u itela u elana na tho'ea dza gumo'uku dzo Dovhololwaho pulane dza tshitirathedzhi ya 2020.

Kuvhonele kwa Nyaluwo ya Ikonomi/Masheleni									
Mbekanyamushumo ya 1: U sa nyetha ha masheleni									
Ndiho: U kala kushumele na u pfadza na ndisedzo ya tshumelo dza ndangulo ya masheleni, u khwatshedza uri ndambedzo a i tambiswi u bva kha nyito dza tshumisano na vhushumisani na u bveledza ndambedzo ya mphomali									
Mvelelo dza tshimiswa dza mbekanyamushumo 1: N/A									
Mvelelo	Mveledzwa	Tsumbam-veledzwa	Kushumele kwa vhukuma kwo toliwaho kha nwaha wa muvhalelano wa 2018/19	Kushumele kwa vhukuma kwo toliwaho kha nwaha wa muvhalelano wa 2019/20	Thagethe ya vhukuma yo pulaniwaho 2020/21	Yo swikelelwaho ya vhukuma kha nwaha wa muvhalelano wa 2020/21 u swika kha datumu ya nekedzwa hafhu	Vhupambuwi u bva zwo thagethe dzo pulaniwaho na dzo swikelelwaho 2020/21	Zwiitisi zwa u pambuwa	Zwiitisi zwa ndovhololo dza Mveledza/Tsumbamveledzwa/Thagethe dza Nwaha nga Nwaha
N/A		Mbuelo u bva kha nyito dza tshumisano/tshumisano	R30m	R29m	R30m	R0.9m	-R29.1m	Thagethe a dzo ngo swikelelwa. Tshumiso ya thandela a yo ngo konadzea nga iwambo wa u valwa ha shango.	Nga mulandu wa tshanduko kha ngona dza vhupulani zwo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, themphuleithi ya Pulane ya Tshirathedzhi ya vhukuma yo nekedzwa 2020- 2025 na APP 2020/21 zwo sedzuluswa u itela u elana na thodea dza gumotuku dza Munga wo Dovhololwaho pulane dza tshirathedzhi ya 2020.
N/A		Mbuelo ya Mphomali	R426.6m	R422.4m	R520.9m	R141.2m	-R379.7m	Thagethe a dzo ngo swikelelea nga iwambo wa u valwa ha shango na dwadzetshifu la COVID-19 la dzhangho, zwe zwa ita uri hu shumawe mushumo mutuku. Ho sedzeswa kha thandela na pulane dza mveledziso ya mvusuludzo ya ikonomi. thukhu Mbuelo ya Mphomali.	Nga mulandu wa tshanduko kha ngona dza vhupulani zwo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, themphuleithi ya Pulane ya Tshirathedzhi ya vhukuma yo nekedzwa 2020-2025 na APP 2020/21 zwo sedzuluswa u itela u elana na thodea dza gumotuku dza Munga wo Dovhololwaho pulane dza tshirathedzhi ya 2020.

Kuvhonele kwa Sisiteme dzi shumaho (dza tshiimiswa)							
Mbekanyamushumo ya 2: Kushumele kwa tshiimiswa na u pfadza hatsho Ndivho: U bveledza na shumisa mbekanyamaithele dza u tevhedza dzi shumaho, maitele na kuitele kwa bindu hu khou tikedzwa kuvhusele ku sa nyethi kwa tshumelo dzo tangelanelanaho dza CGS kathihi na u nkedza na u swikelwa kuvhusele ku pfadzaho kathihi na u shumisa thasululo dza ICT dzi shandukiswaho, u engedzea na u tsireledzea.							
Mvelelo dza tshiimiswa dza mbekanyamushumo ya 2: N/A							
Mvelelo	Mveledzwa	Tsubamveledzwa	Kushumele kwa 2018/19	Kushumele kwa 2019/20	Kushumele kwa 2020/21	Tswikelelo ya 2020/21	Vhupambuzi zwo thagethe dzo pulaniwa ho na dzo swikelelwa ho Yo swikelelwa ya vhwukuma kha n'waha wa muvhalelano wa 2020/21
N/A	N/A	Phesenthe ya thanganyelo ya Thengo yo shumiswaho kha thundu na tshumelo u bva kha Mabinu Maṭuku, O linganelaho na Maṭukuṭuku (QSE na EMEs) u ya nga ha PPPFA ya 2017	48.25%	≥30%	55.90%	A zwi shumit*	Thagothe dzo swikelelwa. Nungo guṭe dzo livhaho kha tshanduko.
							Thoho ya Phesenthe ya thanganyelo ya Thengo yo shumiswaho kha thundu na tshumelo u bva Mabinu maṭuku, maṭukusa na o linganelaho (QSE na EMEs) u ya nga ha maga a PPPFA ya 2017 yo sedzuluswa u ya kha u dzudzanya na u lulamisa mathemo a shumiswaho a phesenthe ya Thengo yoṭhe yo shumiswaho kha thundu na tshumelo u bva Mabinu maṭuku, maṭukusa na o linganelaho (QSE na EMEs) u ya nga ha maga a PPPFA ya 2017.
							Nga mulandu wa tshanduko kha ngona dza vhwupulani zwo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, themphuleithi ya Pulane ya Tshitirathedzhi ya vhwukuma yo nkedzwa 2020-2025 na APP 2020/21 zwo sedzuluswa u itela u elana na thoṭea dza gumoṭuku dza Munga wo Dovhololwaho pulane dza tshitirathedzhi ya 2020.

Kuvhonele kwa Sisiṱeme dzi shumaho (dza tshiimiswa)									
Mbekanyamushumo ya 2: Kushumele kwa tshiimiswa na u pfadza hatsho Ndivho: U bveledza na shumisa mbekanyamaithele dza u tevhedza dzi shumaho, maitele na kuitele kwa bindu hu khou tikedzwa kuvhusele ku sa nyethi kwa tshumelo dzo ṱanganelanaho dza CGS kathihi na u ṱekedza na u swikelwa kuvhusele ku pfadzaho kathihi na u shumisa thasululo dza ICT dzi shandukiswaho, u engedzea na u tsireledzea.									
Mvelelo dza tshiimiswa dza mbekanyamushumo ya 2: N/A									
Mvelelo	Mveledzwa	Tsumbamveledzwa	Kushumelele kwa vhwahawo kwo ṱolihawo kha ṱwaha wa muvhalelano wa 2018/19	Kushumelele kwa vhwahawo kwo ṱolihawo kha ṱwaha wa muvhalelano wa 2019/20	Kushumelele kwa vhwahawo kwo ṱolihawo kha ṱwaha wa muvhalelano wa 2020/21	Tswikelelo ya vhwahawo kha ṱwaha wa muvhalelano wa 2020/21 swika kha datumu ya ṱekedzwa hafhu	Vhupambuwane zwo thagethe dzo pulaniwaho na dzo swikelelilelwa ho Yo swikelelilelwa ya vhwahawo kha ṱwaha wa muvhalelano wa 2020/21	Zwiitisi zwa u pambuwa	Zwiitisi zwa ndovhololo dza Mveledza/Tsumbamveledzwa/Thagethe dza Nwaha nga Nwaha
N/A	Nomboro ya vhwahawo vhwahawo hu si na mbudzi-so	0	0	0	0	A zwi shumile	A zwi shumile saizwi zwi Tshikalo tsha ṱwaha na ṱisedzo i sa athu lavhelelwa	Nga ṱwamba wa tshanduko ya ngona ya vhwahawo yo sumbedziswaho kha Phirisela ya vhwahawo ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshithathedzhi ya vhwahawo yo ṱekedzwa nga 2020-2025 na APP 2020/21 zwo dovhololwa u elana na maga a gumoṱuku A Muhanga wo Dovhololwaho Wa Pulane ya Tshithathedzhi ya vhwahawo ya 2020.	
N/A	Vhuhone ha tshumelo ya bindu ya ndeme	Liga lisa	Liga lisa	≥99%	99.99%	A zwi shumile*	Thagethe dzo swikelelwa. Vha CGS vho dzula vhe na mbalotshikati tshifhinga tsha ṱha na u vha hone ha zwiko zwa 99.99% u mona na Saithi dzoṱhe dza vha CGS.	Nga ṱwamba wa tshanduko ya ngona ya vhwahawo yo sumbedziswaho kha Phirisela ya vhwahawo ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshithathedzhi ya vhwahawo yo ṱekedzwa nga 2020-2025 na APP 2020/21 zwo dovhololwa u elana na maga a gumoṱuku A Muhanga wo Dovhololwaho Wa Pulane ya Tshithathedzhi ya vhwahawo ya 2020.	

A zwi shumile*: Thagethe yo pulaniwaho yo vha i vhwahawo hu si tshivhalo tsha vhwahawo

Kushumele kwa Maimo a Lifhasi									
Mbekanyamushumo ya 3: Vhashumi vho maandafhadzwa, vho shandukiswaho, vho tšutšwedzwa na vha re na vhukoni Ndivho: U kunga na vhulunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndoweshumo ya saintsi ya vhupo, U thaṭa vhukoni maelana na saintsi ya vhupo, zwikili zwa ndaulo na zwa vhulanguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiṭeme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhathu na u vhulunga kha zwiko zwa vhathu tshanduko na phambano.									
Mbekanyamushumo ya mvelo dza tshiimiswa 3: N/A									
Mvelo	Mveledzwa	Tsumbam-veledzwa	Kushumele kwa vho tšutšwedzwa kwo tšilwaho kha nwa wa muvhale-lano wa 2018/19	Kushumele kwa vho tšutšwedzwa kwo tšilwaho kha nwa wa muvhale-lano wa 2019/20	Thagethe yo nwa yo pu-laniwaho 2020/21	Tswikelelo ya vhukuma kha nwa wa muvhale-lano wa 2020/21 swika kha datumu ya u nekudzwa hafhu	Vhupambanani u bva zwo thagethe dzo pulaniwaho na dzo swikelelwa-ho na dzo swikelelwa-ho Yo swikelelwa ya vhukuma kha nwa wa muvhale-lano wa 2020/21	Zwiitisi zwa u pambuwa	Zwiitisi zwa ndovholo dza Mveledza/Tsumbamveledzwa/Thagethe dza Nwaha nga Nwaha
N/A	N/A	Phesenthe ya vhashumi vha saintsi vha re na Digirii Dza Masitasi Na dza Vhudokotela	Liga liswa	41.56%	≥35%	43.78%	A zwi swikelelel*	Thagethe dzo swikelelwa. Dzi elanaho na u vhulunga hu re na vhuṭiimiseleli Kha vhukoni ha vhathu hu tshi tikedzwa nga U tholwa ho livhaho Ha vha re na Digirii dza Masitasi na dza Vhudokotela Na mbuelo ya fhasi ya vhashumi.	Nga nwaambo wa tshanduko ya ngona ya vupulani yo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshitiṭirathedzhi ya vhukuma yo nekudzwa nga 2020-2025 na APP 2020/21 zwo dovhoolwa u elana na maga a gumotuku A Muhanga wo Dovhololwaho Wa Pulane ya Tshitiṭirathedzhi ya vuvhili ya 2020
N/A	N/A	Phimo ya kuṭelele kwa vhashumi	1.37%	7.99%	≤10%	1.90%	A zwi shum*	Thagethe dzo swikelelwa ho sedzwa u dzhenelela ha u vhulunga.	Nga nwaambo wa tshanduko ya ngona ya vupulani yo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshitiṭirathedzhi ya vhukuma yo nekudzwa nga 2020-2025 na APP 2020/21 zwo dovhoolwa u elana na maga a gumotuku A Muhanga wo Dovhololwaho Wa Pulane ya Tshitiṭirathedzhi ya vuvhili ya 2020.

Kushumele kwa Maimo a Lifhasi										
Mbekanyamushumo ya 3: Vhashumi vho maangafhadzawho, vho shandukiswaho, vho tšuwedzawho na vha re na vhuikoni Ndivho: U kunga na vhlunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndowetshumo ya saintsi ya vhuipo, U thata vhuikoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhlunguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhlunga kha zwiko zwa vhatu tshanduko na phambano.										
Mbekanyamushumo ya mvelo dza tshiimiswa 3: N/A										
Mvelo	Mveledzwa	Tsumbam-veledzwa	Kushumele kwa vhuikoni vho maangafhadzawho, vho shandukiswaho, vho tšuwedzawho na vha re na vhuikoni Ndivho: U kunga na vhlunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndowetshumo ya saintsi ya vhuipo, U thata vhuikoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhlunguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhlunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhuikoni vho maangafhadzawho, vho shandukiswaho, vho tšuwedzawho na vha re na vhuikoni Ndivho: U kunga na vhlunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndowetshumo ya saintsi ya vhuipo, U thata vhuikoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhlunguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhlunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhuikoni vho maangafhadzawho, vho shandukiswaho, vho tšuwedzawho na vha re na vhuikoni Ndivho: U kunga na vhlunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndowetshumo ya saintsi ya vhuipo, U thata vhuikoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhlunguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhlunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhuikoni vho maangafhadzawho, vho shandukiswaho, vho tšuwedzawho na vha re na vhuikoni Ndivho: U kunga na vhlunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndowetshumo ya saintsi ya vhuipo, U thata vhuikoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhlunguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhlunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhuikoni vho maangafhadzawho, vho shandukiswaho, vho tšuwedzawho na vha re na vhuikoni Ndivho: U kunga na vhlunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndowetshumo ya saintsi ya vhuipo, U thata vhuikoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhlunguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhlunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhuikoni vho maangafhadzawho, vho shandukiswaho, vho tšuwedzawho na vha re na vhuikoni Ndivho: U kunga na vhlunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndowetshumo ya saintsi ya vhuipo, U thata vhuikoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhlunguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhlunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhuikoni vho maangafhadzawho, vho shandukiswaho, vho tšuwedzawho na vha re na vhuikoni Ndivho: U kunga na vhlunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndowetshumo ya saintsi ya vhuipo, U thata vhuikoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhlunguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhlunga kha zwiko zwa vhatu tshanduko na phambano.	
N/A		Phesenthe ya zwib-viswa zwa Vhugudisi zwi tshi vhambedzwa na tshivhalo tshi badeliwaho kha mutevhe wa mbadelo	2.46%	3.52%	≥ 1%	2.41%	A zwi shum*	Thagethe dzo swikelelwa dzi elanaho na thodea dza vhuigudisi dzo engedzedzawho Dzi elanaho na thodea dza bindu.	Thagethe dzo swikelelwa dzi elanaho na thodea dza vhuigudisi dzo engedzedzawho Dzi elanaho na thodea dza bindu.	Nga iwambo wa tshanduko ya ngona ya vhuipulani yo sumbedziswaho kha Phirisela ya vhuvhili ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshitiirathedzhi ya vhuikuma yo nekedzawho nga 2020-2025 na APP 2020/21 zwo dovhoolwa u elana na maga a gumotuku A Muhanga wo Dovhololwaho Wa Pulane ya Tshitiirathedzhi ya vhuvhili
N/A		Phesenthe ya vhashumi vha tshilaho na vhuholefhalali	1.59%	1.66%	≥ 1.5%	1.67%	A zwi shum*	Thagethe dzo swikelelwa dzi elanaho na Bembelela tshenzhemo ya vhuholefhalali	Thagethe dzo swikelelwa dzi elanaho na Bembelela tshenzhemo ya vhuholefhalali	Nga iwambo wa tshanduko ya ngona ya vhuipulani yo sumbedziswaho kha Phirisela ya vhuvhili ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshitiirathedzhi ya vhuikuma yo nekedzawho nga 2020-2025 na APP 2020/21 zwo dovhoolwa u elana na maga a gumotuku A Muhanga wo Dovhololwaho Wa Pulane ya Tshitiirathedzhi ya vhuvhili

Kushumele kwa Maimo a Lifhasi										
Mbekanyamushumo ya 3: Vhashumi vho maandafhadzawho, vho shandukiswaho, vho tšutšwedzawho na vha re na vhukoni Ndivho: U kunga na vhulunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndoweshumo ya saintsi ya vhuipo, U fhaṭa vhukoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhulanguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhulunga kha zwiko zwa vhatu tshanduko na phambano.										
Mbekanyamushumo ya mvelelo dza tshiimiswa 3: N/A										
Mvelelo	Mveledzwa	Tsumbamveledzwa	Kushumele kwa vhashumi vho maandafhadzawho, vho shandukiswaho, vho tšutšwedzawho na vha re na vhukoni Ndivho: U kunga na vhulunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndoweshumo ya saintsi ya vhuipo, U fhaṭa vhukoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhulanguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhulunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhashumi vho maandafhadzawho, vho shandukiswaho, vho tšutšwedzawho na vha re na vhukoni Ndivho: U kunga na vhulunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndoweshumo ya saintsi ya vhuipo, U fhaṭa vhukoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhulanguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhulunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhashumi vho maandafhadzawho, vho shandukiswaho, vho tšutšwedzawho na vha re na vhukoni Ndivho: U kunga na vhulunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndoweshumo ya saintsi ya vhuipo, U fhaṭa vhukoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhulanguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhulunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhashumi vho maandafhadzawho, vho shandukiswaho, vho tšutšwedzawho na vha re na vhukoni Ndivho: U kunga na vhulunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndoweshumo ya saintsi ya vhuipo, U fhaṭa vhukoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhulanguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhulunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhashumi vho maandafhadzawho, vho shandukiswaho, vho tšutšwedzawho na vha re na vhukoni Ndivho: U kunga na vhulunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndoweshumo ya saintsi ya vhuipo, U fhaṭa vhukoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhulanguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhulunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhashumi vho maandafhadzawho, vho shandukiswaho, vho tšutšwedzawho na vha re na vhukoni Ndivho: U kunga na vhulunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndoweshumo ya saintsi ya vhuipo, U fhaṭa vhukoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhulanguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhulunga kha zwiko zwa vhatu tshanduko na phambano.	Kushumele kwa vhashumi vho maandafhadzawho, vho shandukiswaho, vho tšutšwedzawho na vha re na vhukoni Ndivho: U kunga na vhulunga vhashumi vha zwa saintsi vha zwikili zwa ntha kha ndoweshumo ya saintsi ya vhuipo, U fhaṭa vhukoni maelana na saintsi ya vhuipo, zwikili zwa ndaulo na zwa vhulanguli/vhurangaphanga ngeno hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo, U bveledza na u tshanduko ya zwiko zwa vhatu na u vhulunga kha zwiko zwa vhatu tshanduko na phambano.	
N/A		Mbalom-balo dza EE Tshigwada tsha saintsi (vhafuma-kadzi: vhan-na)	Līga jiswa	Līga jiswa	≤49:≥51	40:60	A zwi shumit*	Thagethe dzo swikelelwa dzi elanaho na u dzhenelela ha u fhaṭa vhukoni Ha vhashumi vha zwino ho sedzwa bembela ja u thola	Thagethe dzo swikelelwa dzi elanaho na u dzhenelela ha u fhaṭa vhukoni Ha vhashumi vha zwino ho sedzwa bembela ja u thola	Nga nwanbo wa tshanduko ya ngona ya vhuipulani yo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshitirathedzhi ya vhuikuma yo nekedzawho nga 2020-2025 na APP 2020/21 zwo dovhoololwa u elana na maga a gumotuku A Muhanga wo Dvhololwaho Wa Pulane ya Tshitirathedzhi 2 ya 2020
N/A		Mbalom-balo dza EE, EXCO (vhafuma-kadzi: vhan-na)	Līga jiswa	Līga jiswa	≤20:≥80	20:80	A zwi shumit*	Thagethe dzo swikelelwa dzi elanaho na mbuelo ya pumu kha jevele ya vhuilangulu	Thagethe dzo swikelelwa dzi elanaho na mbuelo ya pumu kha jevele ya vhuilangulu	Nga nwanbo wa tshanduko ya ngona ya vhuipulani yo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshitirathedzhi ya vhuikuma yo nekedzawho nga 2020-2025 na APP 2020/21 zwo dovhoololwa u elanaho maga a gumotuku A Muhanga wo Dvhololwaho Wa Pulane ya Tshitirathedzhi 2 ya 2020.

A zwi shumit*: Thagethe yo pulaniwaho yo vha i vhuiphara hu si tshivhalo tsha vhuikuma

Kuvhonele kwa maraga (Vhashumisani/vharengi)									
Mbekanyamushumo ya 4: Ndaela ya ndisedzo									
Ndivho: U shuma zwa mbekanyamushumo ya nzudzanyo ya masia othe yo t̄anganelanaho ya saintsi dza vhupo									
Mvelelo dza tshimiswa dza mbekanyamushumo ya 4: N/A.									
Mvelelo	Mveledzwa	Tsumbamveledzwa	Kushu-mele kwa vhukuma kwo toliwaho kha n̄waha wa muvhale-lano wa 2018/19	Kushu-mele kwa vhukuma kwo toliwaho kha n̄waha wa muvhale-lano wa 2019/20	Kushu-mele kwa vhukuma kwo toliwaho kha n̄waha wa muvhale-lano wa 2020/21	Tswikelelo ya vhukuma n̄waha wa muvhale-lano wa 2020/21 swika kha datumu ya u nekudzwa hafhu	Vhupambuzi u bva zwo thagethe dzo pulaniwaho na dzo swikelelwa-ho Yo swikelelwa-ho ya vhukuma kha n̄waha wa muvhale-lano wa 2020/21	Zwiitisi zwa u pambuwa	Zwiitisi zwa ndvhololo dza Mveledza/Tsumbamveledzwa/Thagethe dza Nwaha nga Nwaha
N/A	N/A	Mapa wa vhukateleli ha nga ngomu shangoni ha saintsi dza vhupo	L̄iga liswa	L̄iga liswa	9%	8.4%	-0.6%	Thagethe a dzo ngo swikelelwa nga n̄wambo wa masiandaitwa a u valwa ha shango Nga mulandu wa dwadzetsifu COVID-19. Mushumo muṭuku wo itwa kha GTP. Hu sedzesa nga maanda mveledziso ya thandela dza mvusuludzo ya ikonomi na pulane	Nga n̄wambo wa tshanduko ya ngona ya vhupulani yo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshitiirathedzhi ya vhukuma yo nekudzwaho nga 2020-2025 na APP 2020/21 zwo dovhoololwa u elana na maga a gumotuku A Muhanga wo Dvhololwaho Wa Pulane ya Tshitiirathedzhi ya vuvhili ya 2020.
N/A	N/A	Mapa wa vhukateleli ha nga ngomu shangoni ha saintsi dza vhupo	L̄iga liswa	L̄iga liswa	0.1%	A zwi shumii*	A zwi shumii*	A zwi shumii sa izwi ndisedzo Ya mveledzwa yo vha i sa athu u Swika nga n̄wambo wa u vhiga kha l̄iga ijo.	Nga n̄wambo wa tshanduko ya ngona ya vhupulani yo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshitiirathedzhi ya vhukuma yo nekudzwaho nga 2020-2025 na APP 2020/21 zwo dovhoololwa u elana na maga a gumotuku A Muhanga wo Dvhololwaho Wa Pulane ya Tshitiirathedzhi ya vuvhili ya 2020.

Kuvhonele kwa maraga (Vhashumisani/vharengi)									
Mbekanyamushumo ya 4: Ndaela ya nǎisedzo									
Ndivho: U shuma zwa mbekanyamushumo ya nzudzanyo ya masia othe yo tanganelanaho ya saintsi dza vhupo									
Mvelelo dza tshiimiswa dza mbekanyamushumo ya 4: N/A.									
Mvelelo	Mveledzwa	Tsumbamveledzwa	Kushu-mele kwa vhukuma kwo toliwaho kha nwaha wa muvhalelano wa 2018/19	Kushu-mele kwa vhukuma kwo toliwaho kha nwaha wa muvhalelano wa 2019/20	Kushu-mele kwa vhukuma kwo toliwaho kha nwaha wa muvhalelano wa 2020/21	Tswikelelo ya vhukuma kha nwaha wa muvhalelano wa 2020/21	Vhupambuzi zwo thagetho na dzo swikelelwa-ho Yo swikelelwa-ho ya vhukuma kha nwaha wa muvhalelano wa 2020/21	Zwiitisi zwa u pambuwa	Zwiitisi zwa ndovhololo dza Mveledza/Tsumbamveledzwa/Thagethe dza Nwaha nga Nwaha
N/A		Zwibveledzwa zwa saintsi ya vhupo zwi shumaho u itela miner-ala na Fulufulu	Liga liswa	Liga liswa	6	1	-5	Thagethe a dzo ngo swikelelwa. Muvhigo mutihi wo disa kha kotara ya u thoma sa tshipidja tsha u dzhenelela kha mbekanyamushumo ya mvusuludzo ya ikonomi ya muvhuso	Nga nwambo wa tshanduko ya ngona ya vhupulani yo sumbedziswaho kha Phirisela ya vhuvhili ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshitiirathedzhi ya vhukuma yo nkekedzwa nga 2020-2025 na APP 2020/21 zwo dovhoololwa u elana na maga a gumotuku A Muhanga wo Dvhololwaho Wa Pulane ya Tshitiirathedzhi ya vhuvhili ya 2020.
N/A		Zwibveledzwa zwa saintsi ya vhupo zwi shumaho u itela themamveledziso, tshumiso ya mavu, mutakalo, adithavhela Na Vhupo	Liga liswa	Liga liswa	6	A zwi shumisa*	A zwi shumisa*	A zwi shumisa izwi nǎisedzo Ya mveledzwa yo vha i sa athu u Swika nga nwambo wa u vhaiga kha jiga ilo.	Nga nwambo wa tshanduko ya ngona ya vhupulani yo sumbedziswaho kha Phirisela ya vhuvhili ya 2020 yo bviswaho nga DPME, thempuleithi Ya Pulane ya Tshitiirathedzhi ya vhukuma yo nkekedzwa nga 2020-2025 na APP 2020/21 zwo dovhoololwa u elana na maga a gumotuku A Muhanga wo Dvhololwaho Wa Pulane ya Tshitiirathedzhi ya vhuvhili ya 2020.

Kuvhonele kwa maraga (Vhashumisani/vharengi)									
Mbekanyamushumo ya 4: Ndaela ya ndisedzo									
Ndivo: U shuma zwa mbekanyamushumo ya nzudzanyo ya masia othe yo tanganelanaho ya saintsi dza vhupo									
Mvelelo dza tshimiswa dza mbekanyamushumo ya 4: N/A.									
Mvelelo	Mveledzwa	Tsumbamveledzwa	Kushu-mele kwa vhukuma kwo toli-waho kha nwaha wa muvhale-lano wa 2018/19	Kushu-mele kwa vhukuma kwo toli-waho kha nwaha wa muvhale-lano wa 2019/20	Kushu-mele kwa vhukuma kwo toli-waho kha nwaha wa muvhale-lano wa 2020/21	Tswikelelo ya vhukuma kha nwaha wa muvhale-lano wa 2020/21 swika kha datumu ya u nekzedzwa hafhu	Vhupambui u bva zwo thagethe dzo pulaniwaho na dzo swikelelwaho Yo swikelelwaho ya vhukuma kha nwaha wa muvhale-lano wa 2020/21	Zwiitisi zwa u pambuwa	Zwiitisi zwa ndovhololo dza Mveledza/Tsumbamveledzwa/Thagethe dza Nwaha nga Nwaha
N/A	N/A	Nomboro ya athikili dzo gandiswaho kha pulatifomo dza midia	13	17	24	2	-22	Thagethe a dzo ngo swikelela nga nwanbo wa u valwa ha shango.	Nga mulandu wa tshanduko kha ngona dza vhupulani zwo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, themphuleithi ya Pulane ya Tshitarathedzhi ya vhukuma yo nekzedzwo 2020-2025 na APP 2020/21 zwo sedzuluswa u itela u elana na thodea dza gumotuku dza Munga wo Dovhololwaho pulane dza tshitarathedzhi ya 2020.
	N/A	Levele ya u fushea ha vhashumisani	64.9%	76%	≥70%	A zwi shum*	A zwi shum*	A zwi shum sa izwi ndisedzo ya mveledzwa yo vha i sa athu swika nga nwanbo wa uri liga la u vhiga a li athu swika	Nga mulandu wa tshanduko kha ngona dza vhupulani zwo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, themphuleithi ya Pulane ya Tshitarathedzhi ya vhukuma yo nekzedzwo 2020-2025 na APP 2020/21 zwo sedzuluswa u itela u elana na thodea dza gumotuku dza Munga wo Dovhololwaho pulane dza tshitarathedzhi ya 2020.

Kuvhonele kwa maraga (Vhashumisani/vharengi)									
Mbekanyamushumo ya 4: Ndaela ya ndisedzo									
Ndivho: U shuma zwa mbekanyamushumo ya nzudzanyo ya masia othe yo t̄anganelanaho ya saintsi dza vhupo									
Mvelelo dza tshiimiswa dza mbekanyamushumo ya 4: N/A.									
Mvelelo	Mveledzwa	Tsumbamveledzwa	Kushu-mele kwa vhukuma kwo toli-waho kha n̄waha wa muvhale-lano wa 2018/19	Kushu-mele kwa vhukuma kwo toli-waho kha n̄waha wa muvhale-lano wa 2019/20	Kushu-mele kwa vhukuma kwo toli-waho kha n̄waha wa muvhale-lano wa 2020/21	Tswikelelo ya vhukuma n̄waha wa muvhale-lano wa 2020/21	Vhupambui u bva zwo thagethe dzo pulaniwaho na dzo swikelelwa-ho Yo swikelelwaho ya vhukuma kha n̄waha wa muvhale-lano wa 2020/21	Zwiitisi zwa u pambuwa	Zwiitisi zwa ndovhololo dza Mveledza/Tsumbamveledzwa/Thagethe dza Nwaha nga Nwaha
N/A		Nomboro ya athikili dzo sedzuluswaho nga vhashumisani dzo ganḡiswaho	26	41	30	5	-25	A zwi shumisaizwi ndisedzo ya mveledzwa yo vha i sa athu swika nga n̄wambo wa uri ḡiga ḡa u vhiga a ḡi athu swika. Fhedzi, u tola zwa zwino kha mvelaphanḡa zwi itwa n̄waha munwe.	Nga mulandu wa tshanduko kha ngona dza vhupulani zwo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, themphuleithi ya Pulane ya Tshitiirathedzhi ya vhukuma yo ṅekedzwaho 2020-2025 na APP 2020/21 zwo sedzuluswa u itela u elana na ṅoḡea dza gumoṅuku dza Munga wo Dovhololwaho pulane dza tshitiirathedzhi ya 2020.
N/A		Nomboro ya khandiso dza CGS	6	12	7	3	-4	A zwi shumisaizwi ndisedzo ya mveledzwa yo vha i sa athu swika nga n̄wambo wa uri ḡiga ḡa u vhiga a ḡi athu swika. Fhedzi, u tola zwa zwino kha mvelaphanḡa zwi itwa n̄waha munwe.	Nga mulandu wa tshanduko kha ngona dza vhupulani zwo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, themphuleithi ya Pulane ya Tshitiirathedzhi ya vhukuma yo ṅekedzwaho 2020-2025 na APP 2020/21 zwo sedzuluswa u itela u elana na ṅoḡea dza gumoṅuku dza Munga wo Dovhololwaho pulane dza tshitiirathedzhi ya 2020.

Kuvhonele kwa maraga (Vhashumisani/vharengi)										
Mbekanyamushumo ya 4: Ndaela ya ndisedzo										
Ndivho: U shuma zwa mbekanyamushumo ya nzudzanyo ya masia othe yo t̄anganelanaho ya saintsi dza vhupo										
Mvelelo dza tshiimiswa dza mbekanyamushumo ya 4: N/A.										
Mvelelo	Mveledzwa	Tsumbamveledzwa	Kushu-mele kwa vhukuma kwo t̄oli-waho kha űwaha wa muvhale-lano wa 2018/19	Kushu-mele kwa vhukuma kwo t̄oli-waho kha űwaha wa muvhale-lano wa 2019/20	Kushu-mele kwa vhukuma kwo t̄oli-waho kha űwaha wa muvhale-lano wa 2020/21	Tswikelelo ya vhukuma űwaha wa muvhale-lano wa 2020/21	Tswikelelo ya vhukuma űwaha wa muvhale-lano wa 2020/21	Vhupambui u bva zwo thagethe dzo pulaniwaho na dzo swikelelwa-ho Yo swikelelwaho ya vhukuma kha űwaha wa muvhale-lano wa 2020/21	Zwiitisi zwa u pambuwa	Zwiitisi zwa ndovholo dza Mveledza/Tsumbamveledzwa/Thagethe dza űwaha nga űwaha
N/A		Nomboro ya khandiso dza CGS	136	47	40	1	-39	A zwi shumī* saizwi ndisedzo űwaha nga űwaha ya mveledzwa i sa athu swika zwino. Fhedzi, u t̄ola mvelaphanda zwo itwa kotara inwe na inwe.		Nga mulandu wa tshanduko kha ngona dza vhupulani zwo sumbedziswaho kha Phirisela ya vuvhili ya 2020 yo bviswaho nga DPME, thempuhuleithi ya Pulane ya Tshitiirathedzhi ya vhukuma yo űkedzwaho 2020-2025 na APP 2020/21 zwo sedzuluswa u itela u elana na t̄hoḏea dza gumotuku dza Munga wo Dovhololwaho pulane dza tshitiirathedzhi ya 2020.

Thebulu ya 3. Tshikoro tsha vhubindudzi tsha APP ya u fhedzisele ya nekedzwaho nga 2020/2021 (yo imela kushumele kwa vhukuma kwa n'waha wothe wa ya muvhalelano)

Kuvhonele kwa Nyaluwo ya Ikonomi/Masheleni										
Mbekanyamushumo ya 1: U sa nyetha ha masheleni										
Ndivho: U kala kushumele na u pfaeza na ndisedzo ya tshumelo dza ndangulo ya masheleni, u khwatshisedza uri ndambedzo a i tambiswi u bva kha nyito dza tshumisano na vshumisani na u bveledza ndambedzo ya mphomali										
Mvelelo dza tshiimiswa dza mbekanyamushumo 1: N/A										
Mvelelo	Mveledzwa	Tsumbamveledzwa	Kushumele kwa vhukuma kwo toliwaho kha n'waha wa muvhalelano wa 2018/19	Kushumele kwa vhukuma kwo toliwaho kha n'waha wa muvhalelano wa 2019/20	Kushumele kwa vhukuma kwo toliwaho kha n'waha wa muvhalelano wa 2020/21	Yo swikelelwaho ya vhukuma kha n'waha wa muvhalelano wa 2020/21	Vhupambuwi u bva zwo thagethe dzo pulaniwaho na dzo swikelelwaho Yo swikelelwaho ya vhukuma kha n'waha wa muvhalelano wa 2020/21	Zwiitisi zwa u pambuwa		
Ndangulo i shumaho na u pfaezaho ya zwiko zwa masheleni	Mivhigo ya masheleni yo tolwaho	Phesenthe ya mbedelo dza u shuma i tshi vhambedzwa na mbedelo dzothe	Liga jiswa	61.04%	≤66%	63.00%	A zwi shum*	Thagethe dzo swikelelwa. Nungo dza vhothe dzo itelwa u fhungudza mbedelo dza u shuma		
	Mivhigo ya masheleni yo tolwaho	Phesenthe ya mbedelo dza vhaofisiri i tshi vhambedzwa na mbedelo dzothe	Liga jiswa	65.86%	≤70%	64.03%	A zwi shum*	Thagethe dzo swikelelwa, nga n'wambo wa mbedelo dza vhashumi dzo fhungudzwaho maelana na mbedelo dza ndisedzo ya thandela		
	Mivhigo ya masheleni yo tolwaho	Mbuelo u bva kha nyito dza tshumisano/tshumisano	R30m	R29m	R30m	R23.2m	-R6.8m	Thagethe a dzo ngo swikelelwa nga n'wambo wa u valwa ha shango dwadzetsifu ja (COVID-19).		
	Mivhigo ya masheleni yo tolwaho	Mbuelo ya Mphomali	R426.6m	R422.4m	R520.9m**	R486.2m	-R34.7m	Thagethe a dzo ngo swikelelea nga n'wambo wa u valwa ha shango na dwadzetsifu ja dzhangho zwe zwa ita uri hu shumawe mushumo mutuku. Nyavhelo ya mphomali yo fhungudzwa nga R18.7m nga murahu ha nzudzanyo dza 2020/21 kha muanganyelo a zwiibviswa zwa lushaka na thagethe a yo ngo kona u sedzuluswa.		

A zwi shum*: Thagethe yo pulaniwaho yo vha i vhubhara hu si tshivhalo tsha vhukuma. ** Thagethe ya Mbuelo ya Mphomali ya R520.9m yo vha yo d'isendeka luwalo lwa u fhedzisele lwa nyavhelo lwa n'waha u vhwigaho. R520.9m yo fhedzisele yo fhungudzelelwa fhasi kha R18.7m na nahone ha pfukiswa fhedzi R502.2m u ya kha khoru ya Santsi ya Vhupo.

Kuvhonele kwa Sisiteme dza Shumaho (kwa Tshiimiswa)										
Mbekanyamushumo 2: Kushumele na u pfaadza ha tshiimiswa										
Ndivho: U bveledza na u shumisa mbekanyamattete dzi tevhezaho, maitele na kuitele kwa bindu hu khou tikedzwa tshiedziswa tsha ndisedzo ya tshumelo yo tangelanaho tsha CGS u itela u swikelela u sa nyetha kathini na u nekedza thasululo dzo teaho, dzi shandukiswaho, nahone dzo tsiredzeaho dza ICT										
Mvelelo dza tshiimiswa dza mbekanyamushumo ya 2: Ndingulu i shumaho na u pfaadza na u tevhezha phurothokholo dza kuvhusele/ndaulo										
Mvelelo	Mveledzwa	Tsumbamveledzwa	Kushumele kwa vhukuma kwo toliwaho kha iwaha wa muvhalelano wa 2018/19	Kushumele kwa vhukuma kwo toliwaho kha iwaha wa muvhalelano wa 2019/20	Kushumele kwa vhukuma kwo toliwaho kha iwaha wa muvhalelano wa 2020/21	Yo swikelelwaho ya vhukuma kha iwaha wa muvhalelano wa 2020/21	Vhupambuwi u bva zwo thagethe dzo pulaniwaho na dzo swikelelwaho Yo swikelelwaho ya vhukuma kha iwaha wa muvhalelano wa 2020/21	Zwiitisi zwa u pambuwa		
Ndangulo i shumaho na u pfaadza na u shumisa mbekanyamattete dza tevhezaho, maitele na kuitele kwa bindu hu khou tikedzwa tshiedziswa tsha ndisedzo ya tshumelo yo tangelanaho tsha CGS u itela u swikelele u sa nyetha kathini na u nekedza thasululo dzo teaho, dzi shandukiswaho, nahone dzo tsiredzeaho dza ICT	Mivhigo ya iwaha nga iwaha yo toliwaho	Phesente ya zwiibwisa zwothe zwa thengo kha thundu na tshumelo kha mabindu maṭuku, o linganelaho na maṭukutuku (OSE na EMEs) u yanga ha PPPFA ya 2017	Liga jiswa	48.25%	≥30%	40.75%	A zwi shumii*	Thagethe dzo swikelelwa. Nungo dzo tangelanaho kha zwa tshanduko.		
	Mivhigo ya iwaha nga iwaha yo toliwaho	Tshivhalo tsha vhuṭoli vhu si na mbudziso	Liga jiswa	0	0	0	0	Thagethe dzo swikelelwa. Nungo dzo tangelanaho ho sedzwa u khwiniswa hu sa gumi.		
	Mivhigo ya u vha hone	Tshumelo dza ndeme dza vhubindudzi dze hone	Liga jiswa	Liga jiswa	≥99%	100%	A zwi shumii*	Thagethe dzo swikelelwa. Vha CGS vho dzula vhe na mbalotshikati, tshifhinga tsho engedzwaho na u vha hone ha zwiko zwa 100% kha vha CGS.		

A zwi shumii*: Thagethe yo pulaniwaho yo vha i vhuṭoli vhu si na mbudziso tshivhalo tsha vhukuma NA: Mafhungo ha wanali kha vhuimo uvhu ha u vhiga

Kuvhonele kwa Vhuimo ha Liffhasi									
Mbekanyamushumo 3: Vhashumi vho maangafhadzwa, vho shandukiswaho na hone vha re na vhuikoni Ndivho: u kunga na u dzudza vhashumi vha zwikili zwa ntha kha ndowetshumo ya saints dza vhuipo. U fhaṭa vhuikoni maelana na saints dza vhuipo, ndaulo na ndangulo/zwikili zwa vhuirangaphanda hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo. U bveledza zwiko zwa vhashumi hu na tshanduko na phambano. Mvelelo dza tshiimiswa dza mbekanyamushumo ya 3/ Vhashumi vha konaho									
Mvelelo	Mveledzwa	Tsumbameledzwa	Kushumele kwa vhu-kuma kwo toliwaho kha nṱwaha wa muvhalelano wa 2018/19	Kushumele kwa vhu-kuma kwo toliwaho kha nṱwaha wa muvhalelano wa 2019/20	Kushumele kwa vhu-kuma kwo toliwaho kha nṱwaha wa muvhalelano wa 2020/21	Yo swikelelwaho ya vhuikoni vha zwikili zwa ntha kha ndowetshumo ya saints dza vhuipo. U fhaṭa vhuikoni maelana na saints dza vhuipo, ndaulo na ndangulo/zwikili zwa vhuirangaphanda hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo. U bveledza zwiko zwa vhashumi hu na tshanduko na phambano. Mvelelo dza tshiimiswa dza mbekanyamushumo ya 3/ Vhashumi vha konaho	Vhupambuwi u bva zwo thagethe dzo pulaniwaho na dzo swikelelwaho Yo swikelelwaho ya vhuikoni vha zwikili zwa ntha kha ndowetshumo ya saints dza vhuipo. U fhaṭa vhuikoni maelana na saints dza vhuipo, ndaulo na ndangulo/zwikili zwa vhuirangaphanda hu na u bveledza zwibveledzwa zwa vhubveledzi, sisiteme na tshumelo. U bveledza zwiko zwa vhashumi hu na tshanduko na phambano. Mvelelo dza tshiimiswa dza mbekanyamushumo ya 3/ Vhashumi vha konaho	Zwiitisi zwa u pambuwa	
Vhashumi vha re na vhuikoni	Mivhigo ya zwiko zwa vthathu	Phesenthe ya vhashumi Vha saints vha Re na Digirii dza Masitasi na Vhudokotela	Ḳiga Ḳiswa	41.56%	≥35%	40.47%	A zwi shumii*	Thagethe dzo swikelelwa. Nga kha u vhuilunga hu re na vhuḱimisele kha Vhuikoni ha vthathu ho khou tikedzwa nga vthathola vha re na Masitasi na Digirii dza vhudokotela na u phimo ya vhashumi ya fhasi.	
	Mivhigo ya zwiko zwa vthathu	Phimo ya u vha Hone ha vhashumi	1.37%	7.99%	≤10%	5.48%	A zwi shumii*	Thagethe dzo swikelelwa. nga kha u dzhenelela ha u vhuilunga.	
	Mivhigo ya zwiko zwa vthathu	Phesenthe ya zwibviswa Zwa vhuḱudisi vhu badelisaho Kha mutevhe wa miholo	2.46%	3.52%	≥1%	1.20%	A zwi shumii*	Thagethe dzo swikelelwa. nga kha thodea dza vhuḱudisi dzo engedzeaho maelana na thodea dza bindu.	
	Mivhigo ya zwiko zwa vthathu	Phesenthe ya vhashumi vha tshilaho na vhuholefhalo	1.59%	1.66%	≥1.5%	2.25%	A zwi shumii*	Thagethe dzo swikelelwa. nga kha bembela Ḳa tshenzhemo ya vhuholefhalo	
	Mivhigo ya zwiko zwa vthathu	Mbalombalo dza EE tshigwada tsha zwa saints (vha fuma-kadzi: vhanana)	Ḳiga Ḳiswa	Ḳiga Ḳiswa	≤49:≥51	39:61	A zwi shumii*	Thagethe dzo swikelelwa. nga kha u fhaṭa vhuikoni ha vhashumi vha Zwino na bembela Ḳa u thoma vhashumi Ḳo sedzesaho.	
Mivhigo ya zwiko zwa vthathu	EE Zwiitisiḱika, EXCO (mufumakadzi: munna)	Ḳiga Ḳiswa	Ḳiga Ḳiswa	≤20:≥80	20:80	A zwi shumii*	Thagethe dzo swikelelwa. nga kha mbuelo ya pumu Ḳiga Ḳiswa ha Ḳevele ya vhuilanguli.		

A zwi shumii*: Thagethe yo pulaniwaho yo vha i vhuiphara hu si tshivhalo tsha vhuikoni

NA: Mafungo ha wanali kha vhuimo uvhu ha u vhuiga.

Kuvhonele wa maraga (Vhashumisani/Vharengi)						
Mbekanyamushumo 4: Ndisedzo ya ndaela Mbekanyamushumo 4 ndivho: U bveledza Mbekanyamushumo ya4: Tshumiso dzo khwaṭhisedzwa dza zwibvedzwa zwa saintsī ya vhuṑo u thuba 5% ya tzedzuluso ya mvelo dza tshimiswa dza Mbekanyamushumo ya4: Tshumiso dzo khwaṭhisedzwa dza zwibvedzwa zwa saintsī ya vhuṑo u thuba 5% ya tzedzuluso ya zwibviswa zwa dzhangho na Vhuswaledzi ha saintsī dza vhuṑo ho khwaṭhisedzwa						
Mvelo	Mveledzwa	Tsumbamveledzwa	Kushumele kwa vhu-kuma kwo ṭoliwaho kha ṅwaha wa 2018/19 muvhalelano wa 2018/19	Kushumele kwa vhu-kuma kwo ṭoliwaho kha ṅwaha wa 2019/20 muvhalelano wa 2019/20	Kushumele kwa vhu-kuma kwo ṭoliwaho kha ṅwaha wa 2020/21 muvhalelano wa 2020/21	Yo swikelelwa ho ya vhuṑo u thuba 5% ya tzedzuluso ya mvelo dza tshimiswa dza Mbekanyamushumo ya4: Tshumiso dzo khwaṭhisedzwa dza zwibvedzwa zwa saintsī ya vhuṑo u thuba 5% ya tzedzuluso ya zwibviswa zwa dzhangho na Vhuswaledzi ha saintsī dza vhuṑo ho khwaṭhisedzwa
Tshumiso yo khwaṭhaho ya zwibvedzwa zwa saintsī ya vhuṑo na 5% ya tzedzuluso ya dzhangho ya zwibviswa, na vhuswaledzi ho khwaṭhisedzwa ha saintsī dza vhuṑo.	Mapa ya saintsī ya vhuṑo ngomu shangoni	Vhukateli ha mapa wa saintsī ya vhuṑo ngomu shangoni	Ḳiga Ḳiswa	Ḳiga Ḳiswa	9%	9.03%
	Mapa ya saintsī ya vhuṑo kha phen-delashango	Vhukateli ha mapa wa saintsī ya vhuṑo kha phen-delashango	Ḳiga Ḳiswa	Ḳiga Ḳiswa	0.1%	0.05%
						Thagethe dzo swikelelwa. Zwo sedzeswaho zwa tshirathedzhi kha u wana 5% ya tzedzuluso ya dzhangho yo bviswaho u itela u engedza nungo dza nzudzanyo kha vhuṑo ho teaho. Vha CGS vho dzudzanya tshumelo dza ndeme na u konisa uri mushumo u bvelele kha vhuṑo ha ndeme u ya hoyā.
						Thagethe a dzo ngo swikelelwa nga ṅwambo wa u sa wanala ha vesele dza lwanzheni zwe zwa bveledza mutsho wo teaho na tshikhala tsha tzedzuluso dza lwanzheni dzi songo itwaho. Vha CGS vha ḡisa vesele yavho ya nzudzanyo ine ya ḡo ṭavhanyedziwa mbekanyamushumo ya lwanzheni nga maanḡa kha phendelashango – hu na nungo dzo ṭanganelanaho na zwimiswa zwa muvhuso na vesele dza zwino dzo teaho kha vhuṑo ho tsaho ha lwanzheni.

Kuvhonele wa maraga (Vhashumisani/Vharengi)								
Mbekanyamushumo 4: Ndisedzo ya ndaela Mbekanyamushumo 4 ndivho: U bveledza Mbekanyamushumo ya4: Tshumiso dzo khwaṭhisidzwaho dza zwibveledzwa zwa saintsisi ya vhuṑo u thuba 5% ya tzedzuluso ya Mvelo dza tshimiswa dza Mbekanyamushumo ya4: Tshumiso dzo khwaṭhisidzwaho dza zwibveledzwa zwa saintsisi ya vhuṑo u thuba 5% ya tzedzuluso ya zwibviswa zwa dzhangho na Vhuswaledzi ha saintsisi dza vhuṑo ho khwaṭhisidzwaho								
Mvelo	Mveledzwa	Tsumbamveledzwa	Kushumele kwa vhu-kuma kwo ṭoliwaho kha ṅwaha wa muvhalelano wa 2018/19	Kushumele kwa vhu-kuma kwo ṭoliwaho kha ṅwaha wa muvhalelano wa 2019/20	Kushumele kwa vhu-kuma kwo ṭoliwaho kha ṅwaha wa muvhalelano wa 2020/21	Yo swikelelwaho ya vhuṑo kha ṅwaha wa muvhalelano wa 2020/21	Vhupambuwu u bva zwo thagethe dzo pulani-waho na dzo swikelelwaho Yo swikelelwaho ya vhuṑo kha ṅwaha wa muvhalelano wa 2020/21	
Mvelo	Zwibveledzwa zwa ndeme yo engedzwaho zwa saintsisi ya vhuṑo, mivhigo ṭhangelwa, zwiedziswa zwa 3D, thasululo dza vhubveledzi, sisiteme dza minerala, zwiedziswa zwiimela	Zwibveledzwa zwa saintsisi ya vhuṑo zwa minerala na fulufulu	Liga ḽiswa	Liga ḽiswa	6	7	+1	Thagethe dzo swikelelwa. Inwe asainimthe hu khou lugiselwa tshumisano yo khwaṭhiswaho na Tsedzuluso ya Afrika ya muvhuso, Migodi na Tshumisano ya zwa Masheleni.
	Zwibveledzwa zwa saintsisi ya vhuṑo zwi engedzaho ndeme na mivhigo na zwiedziswa zwa 3D na thasululo dza vhubveledzi	Zwibveledzwa zwo shumiswa-ho zwa themamveledziso ya saintsisi ya vhuṑo, tshumiso ya mavu, mutakalo na vhuṑo	Liga ḽiswa	Liga ḽiswa	6	10	+4	Thagethe dzo swikelelwa. U dzhenelela kha themamveledziso i rangaho phanda ikonomi hu na nungo dzinwe dzo rangwaho phanda nga zwibveledzwa vha vha CGS u bveledza phindulo ya mbekanyamushumo dza themamveledziso.
Tshumiso yo khwaṭhaho ya zwibveledzwa zwa saintsisi ya vhuṑo na 5% ya tzedzuluso ya dzhangho ya zwibviswa, na vhuswaledzi ho khwaṭhisidzwaho ha saintsisi dza vhuṑo.								

Kuvhonele kwa maraga (Vhashumisani/Vharengi)										
Mbekanyamushumo 4: Ndisedzo ya ndaela Mbekanyamushumo 4 ndivho: U bveledza Mbekanyamushumo ya saintsi ya vhuipo i shumaho ya nzudzanyo ya masia othe Mvelo dza tshimiswa dza Mbekanyamushumo ya4: Tshumiso dzo khwaṭhisedzwaho dza zwibveledzwa zwa saintsi ya vhuipo u thuba 5% ya tsedzuluso ya zwibwiswa zwa dzhangano na Vhuswaledzi ha saintsi dza vhuipo ho khwaṭhisedzwaho										
Mvelelo	Mveledzwa	Tsumbamveledzwa	Kushumele kwa vhuipo ma kwo toliwaho kha nwa-ha wa muvhale-lano wa 2018/19	Kushumele kwa vhuipo ma kwo toliwaho kha nwa-ha wa muvhale-lano wa 2019/20	Kushumele kwa vhuipo ma kwo toliwaho kha nwa-ha wa muvhale-lano wa 2020/21	Yo swikelelwa ya vhuipo ma kha nwa-ha wa muvhale-lano wa 2020/21	Vhupambuwi u bva zwo thagethe dzo pulaniwaho na dzo swikelelwa Yo swikelelwa ya vhuipo ma kha nwa-ha wa muvhale-lano wa 2020/21			
Athikili dza midia		Tshivhalo tsha athikili dzo ganḁiswaho kha pulatifomo	13	17	24	25	+1	Thagethe dzo swikelelwa. nga kha nungo dzo tnganelanaho dza u ḁivhadza tshitshavha nga mushumo wa vha CGS hu khou fhiindulwa mbudziso dza midia na zwiwo zwa sisitemiki nga nwa-ha ya muvhalelano.		
Tshenzhemo ya khwine ha pfun-gavhuṅe, tshumelo na zwibveledzwa zwa CGS na	Muvhigo wa tzedzuluso ya vhashumisani	Levele ya u fusha ha vhashumisani	64.9%	76%	≥70%	88.48%	A zwi shum*	Thagethe dzo swikelelwa nga kha tshumiso ya vhudavhidzani na vhuishaka ha vhashumisani, zwine zwa bveledza mvelelo mbuya.		
Ndangulo ya ndivho yo khwiniswaho	Athikili dza vhashumisani dzo ganḁiswaho sa dzhenala dza saintsi, ndima dza bugu na volumno dzo edithiwaho	Tshivhalo tsha athikili dza vhashumisani dzo sedzuluswaho dza ganḁiswa	26	41	30	33	+3	Thagethe dzo swikelelwa. U ganḁiswa ha mabambiri a ṭolwaho nga vhashumisani ane a pulaniwa nwa-ha nga nwa-ha zwi tshi bva kha masia a shedulu ya vhuiganḁisi kanzhi zwi bveledzwa kha mabambiri u ṭavhanya na kana u lenga u fhira zwe zwa lavhelelwa.		
	Tsumbo dza dzhenala, bujethini, bugu na atilasi.	Tshivhalo tsha khangiso dza CGS	6	12	7	10	+3	Thagethe dzo swikelelwa. Vha CGS vho ṭavhanyedzisa tshivhalo tsha khangiso.		
	Tsumbo dza Zwibveledzwa zwa khoniferentsi, zwibveledzwa nyengedzedzwa, mabambiri na notsi	Tshivhalo tsha zwa kutshimbidzele kwa khoniferentsi	136	47	40	66	+26	Thagethe dzo swikelelwa. maguvhangano ya vha CGS ine ya farwa minwaha mivhili minwe na mirwe, zwe zwa bveledza zwibveledzwa zwo vhalaho, zwine zwinzhi zwa vha zwo itwa nga vhorasaintsi vha CGS.		

A zwi shum*: Thagethe yo pulaniwaho yo vha i vhuiphara hu si tshivhalo tsha vhuipo

NA: Mafhungo ha wanali kha vhuipo uvhu ha u vhuipo.

Tshiqirathedzhi tsha u kunda fhethu ha u shuma hu re fhasi

Zwiqirathedzhi dza u kunda u shuma hu re fhasi zwi katela

- 1) Pulane dza vha CGS u bveledza na u shumisa tshiedziswa na u bveledzwa mbuelo u bva kha masia othe u tikedza na khwaṭhisedza nyito dza vhubindudzi/tshumisano musi hu khou khwaṭhisedzwa u dzhenelela vhuḍifhinduleli ha mveledziso ha lushaka.
- 2) Uri vha CGS vha swikelele thagethe dza mapa wa phendelamashango, i do dḱisa vesele na u isa vesele ine ya ṭoḱea musi wa kotara ya vhuraru ya ṅwaha une wa khou sedzuluswa, u ṭavhanyedzisa mbekanyamushumo ya lwanzheni, nga maandḱa tsini na ngomu shangoni. Tshumisano dzi tea u khwaṭhisedzwa na zwipiḱa zwa muvhuso na vesele dzo teaho u ya kha vhupo ha nga ngomu shangoni.
- 3) Thendelo ya vha CGS kha kxanedzano na vhukoni hayo ha u bwa u itela u khwaṭhisedza nungo dzayo dza u kunga vharengi kha saithi dza ndeme. Ngwano dza u bwa huṅwe huvhili zwi do khunyeledzwa nga ṅwaha ya muvhalelano 2021/22 u itela u tendela ṭhalutshedzo ya u ṭavhanyedzisa thagethe dza ikonomi, ngeno hu na u tikedza saintsu ya ndeme kathihi na mbekanyamushumo ya thekxhikhala ya vhupo kha tshimiswa.

Phindulo ya CGS kha dwadzetzshifu ja COVID-19

Thebulu ya 4.Mvelaphanda ya phindulo ya tshiimiswa kha dwadzetzshifu ja COVID-19

Mbekanyamushumo/mbekanyamushumo thukhu	U dzhenelela	Vhupo ha divhahupo (vundu/ tshiritiki/ masipala wapo) (hune zwa konadzea)	A hu na vhavhuelwa (hune zwa konadzea)	U shaya vhuanganyeli ha vhavhuelwa (hune zwa konadzea)	Thanganyelo ya dzhenelela ha mugaganyag-wama (R'000)	Zwibviswa zwa mugaganyag-wama u ya nga u dzhenelela	U dzhenelela ha mveledzwa kha APP (hune zwa shuma)	Mvelelo dza zwenezwo
Mbekanyamushumo ya 1: U sa nyetha ha zwa masheleni	U tola hu sa gumi na tshumiso ya phindulo dza CGS COVID-19 na netshedzo ya ngeletschedzo ya vha Komiti ya CGS COVID-19	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	Mbadelo kha u swikelela vhu katela ha saintsi ya vhupo ha nga ngomu shangoni na ha zwibveledzwa zwa saintsi wa zwa saintsi ya vhupo u itela minerala na fulufulu na zwibveledzwa zwa saintsi ya vhupo zwa themamveledziso, tshumiso ya mavu, mutakalo, maqithavhela na vhupo, athikili dzo ganqiswaho kha pulatifo-mo dza midia, athikili dzo sedzuluswaho nga vhashumisani, athikili dza CGS na zwithu zwinzhi zwo fhambanaho zwo ganqiswaho.	Phesenthe yo engedzwaho ya mapa ya saintsi dza nga ngomu shangoni na saintsi i shumaho u dzhenelela kha mvelelo dza tshiimiswa na tshumiso dzo kwathisedzwaho zwa zwibveledzwa zwa saintsi ya vhupo na u thuba 5% ya mukovhe wa dzhangano wa zwibviswa zwa tsedzululo
Mbekanyamushumo ya 2: Kushumele na u pfadzha ha dzangano								
Mbekanyamushumo ya 3: Vhashumi vho shandukiswaho, vho tufuwedzwaho na u vha na vhukoni								
Mbekanyamushumo ya 4: Nqisedzo ya ndaela								
Mbekanyamushumo ya 5: Vhuletshedzi, vhuqwamiani ha vhashumisani na ndangulo ya ndivho								

Mbekanyamushumo/mbekanyamushumo thukhu	U dzhenelela	Vhupo ha divhahupo (vundu/tshiti/ masipala wapo) (hune zwa konadzea)	A hu na vhavhuelwa (hune zwa konadzea)	U shaya vhuanganyeli ha vhavhuelwa (hune zwa konadzea)	Thanganyelo ya dzhenelela ha mugaganyag-wama (R'000)	Zwibviswa zwa mugaganyag-wama u ya nga u dzhenelela	U dzhenelela ha mveledzwa kha APP (hune zwa shuma)	Mvelelo dza zwenezwo
Mbekanyamushumo ya 1: U sa nyeṭha ha zwa masheleni	Mveledziso ya mbekanyamaitete ya COVID-19u itela u londona fethu ha u shumela ho tsireledzeaho na maga a u thivhe-la phaḡaladzo ya vhlwadze.	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	U dzhenelela kha thagethe dzo swikelelwaho dza Thebulu ya 1 afho nṭha	Phesenthe yo engedzaho ya mapa ya saintsi ya vhupo ya ngomu shangoni na zwibveledzwa zwi dzhenelaho kha mvelelo dza tshiimiswa na u khwaṭhisa tshumiso dza saintsi ya vhupo na u thuba 5% ya mukovhe wa dzhangwa wa zwibviswa zwa tsedzululoso.
Mbekanyamushumo ya 2: Kushumele na u pfadza ha dzangano	Mbekanyamait-ele i dovha ya sumbedzisa magane a tea u dzhiitwa u tsireledze na mutakalo wa vhashumi musu wa dwadzetshifu, hu na u khwaṭhisedza uri hu na mve-laphanda	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi		
Mbekanyamushumo ya 3: Vhashumi vho shandukiswaho, vho ṭuṭuwedzwaho na u vha na vhukoni								
Mbekanyamushumo ya 4: Nḡisedzo ya ndaela								
Mbekanyamushumo ya 5: Vhuetshedzi, vhukwam-ani ha vhashumisani na ndangulo ya nḡivho								

Mbekan-yamushumo/mbekan-yamushumo thukhu	U dzhenelela	Vhupo ha divhahupo (vundu/tshiti/rikiki/masipala wapo) (hune zwa konadzea)	A hu na vhavhuelwa (hune zwa konadzea)	U shaya vhuanganyeli ha vhavhuelwa (hune zwa konadzea)	Thanganyelo ya dzhenelela ha mugaganyag-wama (R'000)	Zwibviswa zwa mugaganyag-wama u ya nga u dzhenelela	U dzhenelela ha mveledzwa kha APP (hune zwa shuma)	Mvelo dza zwenezwo
Mbekanyamushumo ya 5: Vhueleletshedi, vhuqwamishani ha vhashumishani na ndangulo ya nqivho	Vhukateli ha vha CGS kha Ndangulo dza Mulayo wa Ndangulo ya Zwiwo (wo ganḁiswaho nga ja 16 Lambamai 2020. Masiantaitwa a vhuḁoli kha seisimithi nga kha Khoru ya saintsi dza vhupo hu tea u khwaḁhisedzwa u bva zwino. Vha CGS vha ḁola u nyito dzo engedzwaho dza seisimiki u mona na vhupo ha mugodi zwi vhwahwaho misi yoḁhe kha Minisiḁa Vho Mantashe kha vhupo ho tsireledzeaho na Migodi.	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	Nyaluwo ya migodi yo engedzeaho kha kotara ya vhuraru ya 2020. Vhubveledzi ho engedzeaho ha methala dza tshigwada tsha pulatinamu, ngweḁi, musuku na manganisi 288.3%.
Mbekanyamushumo ya 5: Vhueleletshedi, vhuqwamishani ha vhashumishani na ndangulo ya nqivho	Mveledziso ya pulane ya tshumiso ya tshedzuluso	Afrika Tshipembe	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi

Mbekanyamushumo/mbekanyamushumo thukhu	U dzhenelela	Vhupo ha divhahupo (vundu/tshirikiki/masipala wapo) (hune zwa konadzea)	A hu na vhavhuelwa (hune zwa konadzea)	U shaya vhuanganyeli ha vhavhuelwa (hune zwa konadzea)	Thanganyelo ya u dzhenelela ha mugaganyag-wama (R'000)	Zwibviswa zwa mugaganyag-wama u ya nga u dzhenelela	U dzhenelela ha mveledzwa kha APP (hune zwa shuma)	Mvelelo dza zwenezwo
Mbekanyamushumo ya 4: Ndisedzo ya ndaela	U sedzululswa ha thandela dza mvusuludzo ya ikonomi	Vundu la Limpopo, Vundu la Northern Cape na Vundu la North West	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	U dzhenelela kha vhuakateli ha saintisi ya vhupo ha ngomu shangoni	Phesenthe yo engedzaho ya mapa ya saintisi ya vhupo ya ngomu shangoni na zwibveledzwa zwi dzhenelaho kha mvelelo dza tshimiswa na u khwathisa tshumiso dza saintisi ya vhupo na u thuba 5% ya mukovhe wa dzhangwa wa zwibviswa zwa tzedzululiso
Mbekanyamushumo ya 5: Vhueleletshedi, vhuqwamansi ha vhashumisani u itela u tshanyedzisa thandela dza mvusuludzo ya ndeme ya ikonomi	U mbekanyamushumo dza engedzwa ha vhuqwamansi na vhashumisani u itela u tshanyedzisa thandela dza mvusuludzo ya ndeme ya ikonomi	Vundu la Limpopo, Vundu la Northern Cape, Vundu la Eastern Cape, Vundu la Western Cape, Vundu la Free State, Vundu la Mpumalanga, Vundu la KwaZulu-Natal na Vundu la North West	A zwi shumi	A zwi shumi	A zwi shumi	A zwi shumi	Levele ya u fusha ha vhashumisani 88.48%	Tshenzhemo yo khwiniswaho wa pfungavhunge ha vha CGS, tshumelo na zwibveledzwa.

Thebulu ya 5. Kushumele ku re na vhuṭumani na mugaganyagwama

Mbekanyamushumo / nyito/ tshipikwa	2020/2021			2019/2020		
	Mugagan-yagwama	Zwibviswa zwa vhukuma	Zwibviswa zwi fhasi (zwo kalulaho)	Mugagan-yagwama	Zwibviswa zwa vhukuma	Zwibviswa zwi fhasi (zwo kalulaho)
	R'000	R'000	R'000	R'000	R'000	R'000
Mbekanyamushumo ya 5: Vhueleledzi, vhukwamani ha vhashumisani na ndangulo ya ndivho	19 591	15 425	4 166	17 736	13 881	3 855
Mbekanyamushumo ya 4: Nḍisedzo ya ndaela	484 305	381 317	102 988	438 463	343 166	95 297
Mbekanyamushumo ya 1: U sa nyetha ha zwa masheleni	81 482	64 155	17 327	73 769	57 736	16 033
Mbekanyamushumo ya 3: Vhashumi vho shandukiswaho, vho tuṭuwedzwaho na u vha na vhukoni	18 245	14 365	3 880	16 518	12 928	3 590
Mbekanyamushumo ya 2: Kushumele na u pfadza ha dzangano	127 939	100 733	27 206	115 829	90 654	25 175
Ṭhanganyelo	731 562	575 995	155 567	662 315	518 365	143 950



Fhethu ha u gamba ya kule kha phendelashango ya Namibia, devhula Luderitz, Namibia

4. MAVHALA A NNGWE A KUSHUMELE

4.1 MBEKANYAMUSHUMO YA THEKHINIKHALA YA SAINTSIVHUPO

Vha CGS vha shumisa IMMP ya lushaka nga kha GTP, zwine zwa katela khuvhanganyo ya tshodiso ya masiandaitwa mahulwane ya saintsi dza vhupo na thandela dza nzudzanyo. Kha n'waha une wa khou sedzuluswa, GTP yo olwa hafhu uri i kone u fhindula mvusuludzo ya ikonomi nga murahu ha COVID-19 fhanu Afrika Tshipembe.

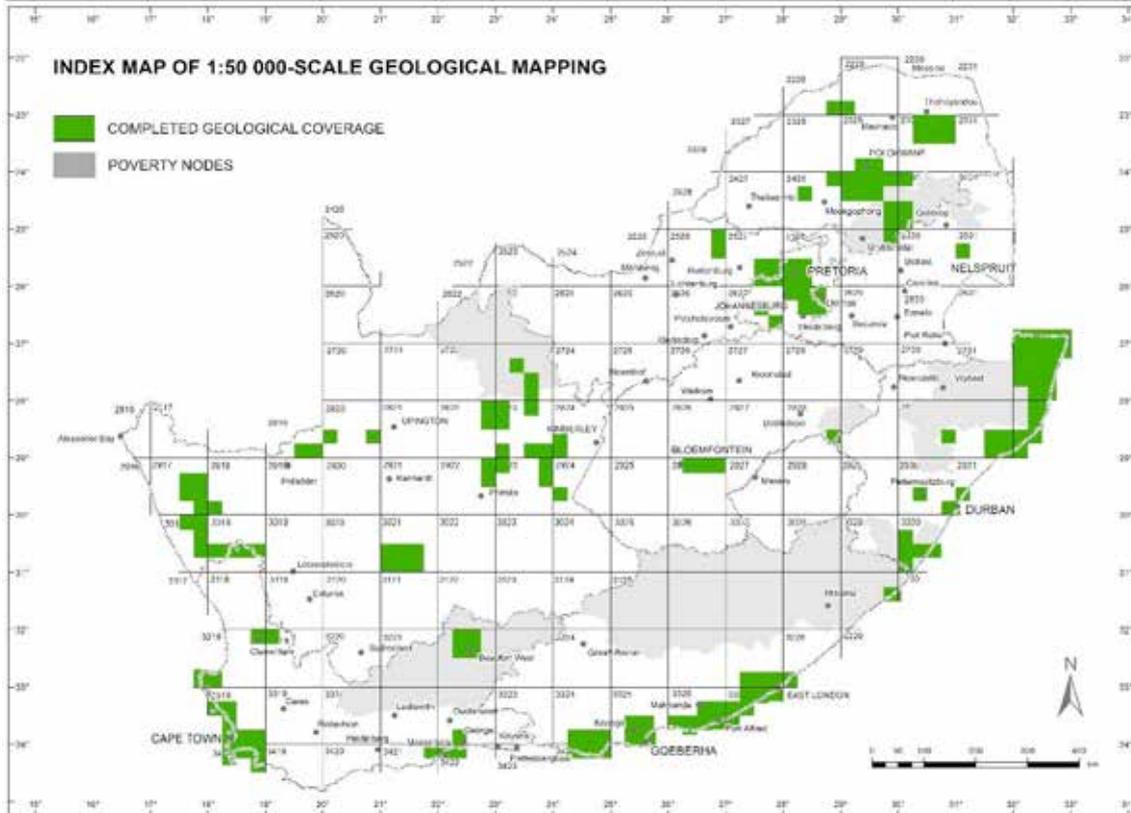
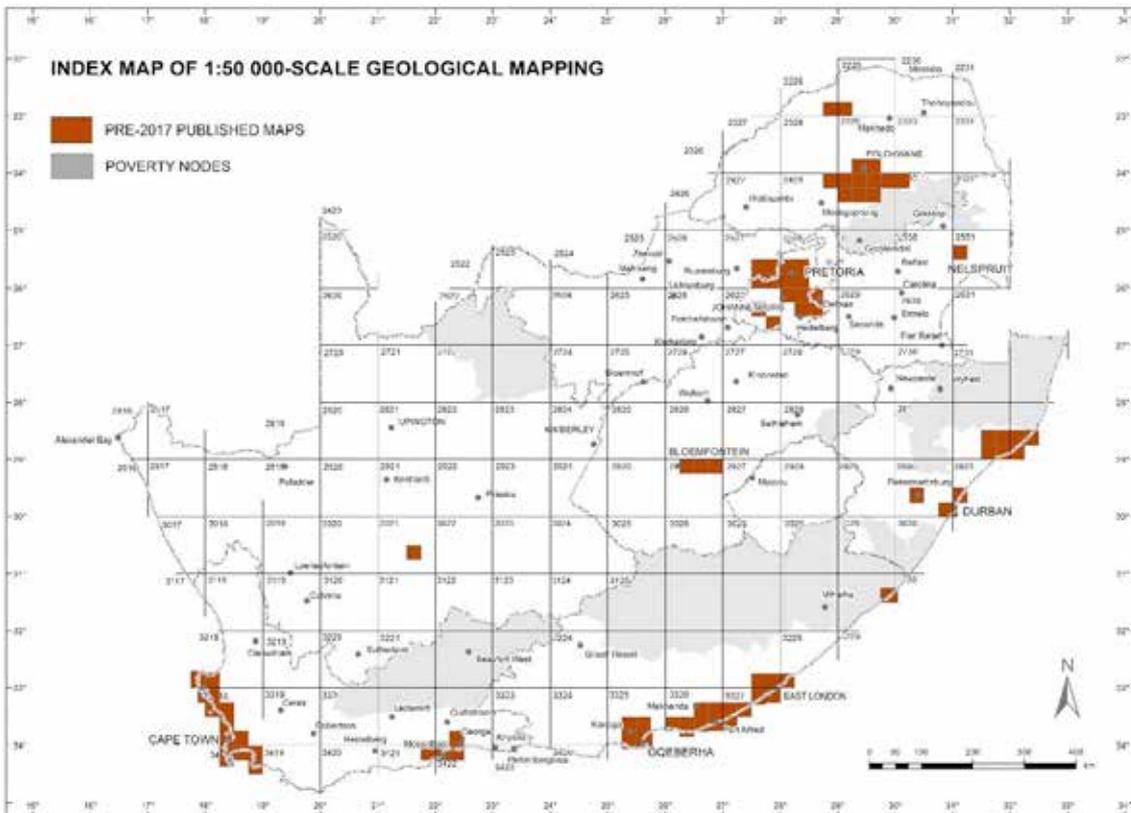
Musi wa n'waha une wa khou sedzuluswa, GTP yo vha i na thandela dza 35 hu tshi katelwa ya vhubindudzi na thandela ya OAGS ine ya katela zwiko zwa minerala na fulufulu, mutakalo, maqithavhela, vhupo, themamveledziso na tshumiso ya mavu, vhubveledzi, vhuswaledzi ha saintsi dza vhupo, zwothe zwe zwa vhonala zwi zwa ndeme u nekedza mafhungo a saintsi ya vhupo a ndeme. Nzudzanyo ya saintsi dza vhupo ya ndeme kha zwikalo zwo fhambanaho na masia a ndeme a mbekanyamushumo ya nzudzanyo ya saintsi ya vhupo kha n'waha une wa khou sedzuluswa, vha CGS bvela phan'na na mbekanyamushumo ya nzudzanyo yo dodombedzwaho kha tshikalo tsha 1:50 000, u engedza vhukateli ha mapa wa nga ngomu shangoni.

U swika kha 9.03% wo dzudzanywa u bva kha mimapa miñwe ya 18 ya ndeme ya n'ha yo bveledzaho. Vha CGS vho khwinifhadza vhukateli ha mapa wa nga ngomu shangoni 1:50 000 u bva fhasi ha 5% phan'na ha tshumiso ya IMMP (Tshifanyiso tsha vhurathi). Vha CGS vho sedza kha Mavundu a Eastern, Western na Northern Cape kathihi na a Mpumalanga, Free State, KwaZulu-Natal, North West na Vundu la Limpopo. Aya mavundu ha tou vha fhedzi na mbono ya shango i mangadzaho ine ya toga huñwe u pfesesa hafhu, a do vha a vha na khonadzeo khulwane ya minerala na fulufulu ye ya lingiwa.

Ndingo ya zwa vhupo ya mutheo yo bvela phan'na sa tshipidza tsha Mbekanyamushumo ya Karoo Deep Drilling (KDD), hu na mvelaphan'na kha u bwa i tshi swika kha u tsa u swika kha 2412.06m nga la 31 Tshafamuhwe 2021. A hu na khombo khulwane dza tsireledzo dzo nwaliswaho.

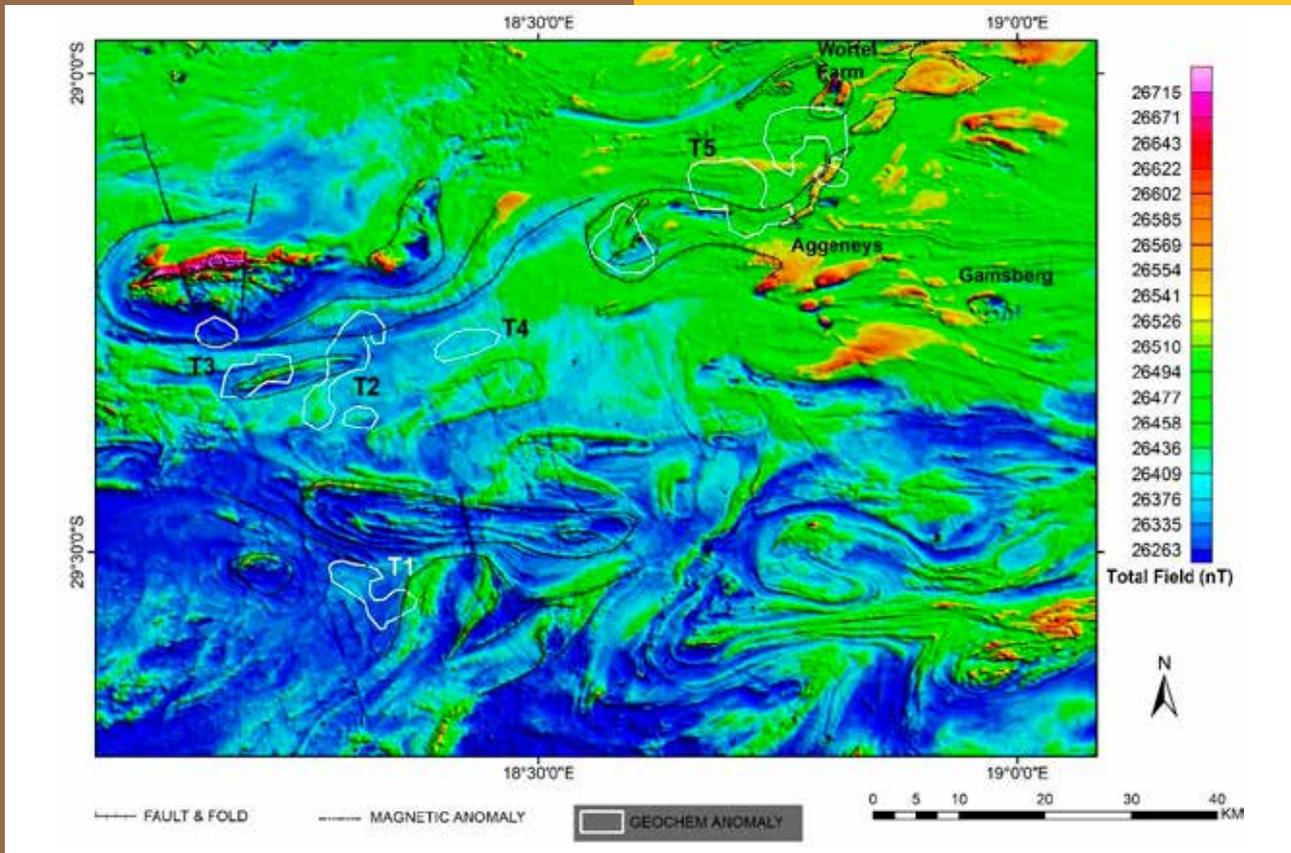
Mvelaphan'na ya GTP na mavhala a nngwe a 2020/21 a reriwa kha khethekanyo dzi tevhelaho.





Tshifanyiso tsha vhurathi. Mbambedzo ya mapa wa vhukатели wa ngomu shangoni mathomoni n̄waha wa muvhaleano wa 2017/18, phanḁa ha IMMP, u swika mafheloni n̄waha wa muvhaleano wa-2020/21

SAINTSI DZA VHUPO DZA ZWIKO ZWA MINERALA NA FULUFULU



Mapa wa maginethiki wa nnda wa Vhupo ha Aggeneys wo dzheniswaho nga zwi songo zwa dzhiokhemisiṭiri.

Sekithara dza minerala na fulufulu ndi vhadzheneleli vha ndeme kha nyaluwo ya Afrika Tshipembe na pulane ya mveledziso. Thero ya Zwiko zwa Minerala na Fulufulu zwa Saintsi ya Vhupo i konisa vhuḏifhinduleli ha lushaka, hu tshi katela nḡisedzo ya tshikhala na mafhungo na tshumelo dza saintsi ya vhupo. Mafhungo aya a kunga vhubindudzi hapo na ha dzitshaka u bveledza zwiko zwa minerala na u gonyiswa zwa peṭiroḷiamu. Thero yo pika u engedza u ṭanganedzwa ha ḷaisentsi na zwiḃviswa zwa tshedzuluso, vhubindudzi ha nnda ha ho livhaho, hune ha fhedzisela hu tshi koniswa nga Operation Phakisa, ine ya vha vhubveledzi ha muvhuso wa Afrika Tshipembe ho sikelwaho u ṭavhanyedzisa tshumiso ya thasululo kha zwiṭerwa zwa mveledziso ya ndeme zwi nga ho sa maḡanzhe na ikononi dza u vhavhalela mupo. Tsha u fhedzisela, mushumo wo sedza u engedza thikhedzo ya tshedzuluso, mveledziso na vhubveledzi ha gese ya tshipeiti na migodi.

Sa kha dziṅwe thero, thero iyi i koniswa nga Khethekanyo 5.1(c) ya Mulayo wa Saintsi dza Vhupo wo Shandukiswaho, u shuma sa tsumbavhuyo ya mafhungo a thekhinikhala a vhupo, u humbulela mafhungo na mafhungo oṭhe a saintsi dza vhupo a elanaho na ḷifhasi kha vhupo ha lwanzheni na vhupo ha maginethiki nga fhasi ha thero ya, CGS i kuvhanganya, u saukanya na u shuma saintsi ya ndeme ya nṭha ya nga ngomu shangoni, kha phendelashango, data ya dzhiḷodzhikhala, dzikhemikhaḷa, dzhiḷofisikhala na minerala) ine ya ḑo fhungudza khohakhombo na u engedza fulufhelo kha tshedzuluso ya migodi nga maanda vhupo hu songo sedzululwa zwavhuḑi. Data iyi i dovha ya shumiswa u topola zwiko zwa mupo zwa ikononi zwine zwa nga vha hone sa malasha, peṭiroḷiamu, gese ya mupo, gese ya tshileithi na fulufulu ḷa dzhiothemala.

4.2 THANDELA DZI ELANAHO NA ZWIKO ZWA FULUFULU

Pulane yo Tanganelanaho ya Dzitshaka, yo bviswaho kha gurandha ya muvhuso nga Tshimedzi 2019, ndi pulane ya mveledziso ya themamveledziso ya fulufulu yo disendekaho nga ndisedzo ya mudagasi une wa si dure na ndinganyiso ya thodea, hu na u dzhiela ntha vhutsireledzi, ndisedzo na vhupo (ha fhungudzwa mihasaladzo na tshumiso ya maḍi) Afrika Tshipembe li bvela phanda na u thanganelo ya fulufulu ire na mutakalo, yo fhambanaho u itela u fhungudza u disendeka nga tshiko tshithihi tsha ndeme tsha fulufulu na u bveledza ikonomi ya khaboni ya fhasi ya Just Transition.

4.2.1 MBEKANYAMUSHUMO YA KAROO DEEP DRILLING NA MUTHEOWA ZWA VHUPU

Vhubvo na ndivho: Mbekanyamushumo ya Karoo Deep Drilling (KDD) yo sedza kha u bveledza mutheo wa zwa vhupo kha vhupo ha Karoo tshipembe u itela u divhadza na u khwathisedza muhanga wa ndaulo u itela mveledziso ya gese ya tshileithi Afrika Tshipembe, Tshipida tsha ndeme tsha ngudo ya ngudo dza mutheo ndi u data ya saintsi ya masia manzhi u pfesesa tshiimo tsha zwino tsha haiḍirodzhiḍodzhi na seisimithi kha vhupo na u sumbedzisa vhupo vhune khaho, sesimithi i nga vhangwa nga tzedzuluso ya gese ya tshileithi na nyito dza tzedzuluso.

Mbekanyamushumo i katela u bwa gwedzho lo tsaho lwa nzimo lo sedzaho u tumanya na u talula yunithi dzine dza nga vha hone dzi re na gese ya tshileithi ya tshileithi tsha khaboni ya Tshigwada tsha Ecce tsha Tshigwada tshihulwane tsha Karoo. Gwedzho li kha vhupo vhu re ~2 km, badani, vhubvadvha devhula ha Beaufort West kha Vundu la Western Cape. Data yo kuvhanganyiwaho u tsa na mugodi i katela ya dzhiḍodzhikhala, dzhiḍodzhikhala, dzhithekhinikhala na mafhungo a haiḍirodzhiḍodzhikhala a u khwinisa kupfesesele kwa ndango dza saintsi dza vhupo kha matombo a elelaho maḍithavhela a gese ya tshileithi, nga maandha a yo a tshinyadzwo u itela maḍithavhela. Thanganyo ya u dzhenelela ha doleraithi u swika zwino na ya izwo zwo lavhelelwaho ya mvelaphanda ya u bwa na madzangalelo o imaho ngauri a kupfesesele kwa mushumo wa doleraithi kha phaḍaladzo na thanganyo ya maḍithavhela hu na yunithi dza u vhulunga haiḍirokhabini.

U swikelela na mavhala a nngwe. U tola seisimithi na maḍithavhela na u khethekanywa ha dzhiḍodzhikhala na ha dzhiotekhinikhala hu na u bvela phanda na u shumiswa.

Nyito dza u bwa na dza tzedzuluso

U bwa ho thoma nga la 21 Khubvumedzi 2020 na u swikelela u tsa ha 2 412.06m nga la 31 Thafamuhwe 2021, zwine zwa ita uri u thanganyelo ya munwelelo wa phimo ya 13.3 ms/day. Gwedzho li bwiwa nga u fhungudzea hu tevhekanaho ha phandakati hu na u tsa, u thoma kha 518m PQ (85mm core \varnothing /122.6mm hole \varnothing). Phandakati ha buli ndi HQ (63.5mm core \varnothing /96mm hole \varnothing) muelo u thoma kha 518m u swika kha 1 164m. Gwedzho la zwino li na

NQ size (47.6mm core \varnothing /75.7mm hole \varnothing). Mulindi wo tangwa nga tshiputelo tsha 1 164mm. Tzedzuluso dza thikhedzo ya semennde dzo khwathisedza uri hu na thikhedzo kha mulindi yo khwathaho nahone yo teaho tzedzuluso dza mulindi u tsaho. Tzedzuluso dza dzhiḍodzhikhala dza mulindi u tsaho dzo fhedziswa u swika kha vhungolo ho valelwaho

Thanda dza ndeme, tzedzuluso dza vhungolo na zwikele zwa haiphasekithirala

Mbekanyamushumo ya KDD yo bvisa mafhungo a ndeme u khwinisa kupfesesele kwa dzhiḍodzhikhala, ndingo dza khonadzeo ya ikonomi na ndingo dza masiandaitwa a vhupo. U swika zwino, vhudzivha ha u bwa ho vha to rikiwa u itela zwa u bwa daimane, nahone ho sedzuluswa u tsa na mugodi nga thekiniki dza pheḍrofisikhala dzo vhalaho. Tshifanyiso tsha vhusumbe tshi sumbedza vhungolo ho valelwaho ha gwedzho vhu elanaho na thevhekanano ya etholodzhikhala.

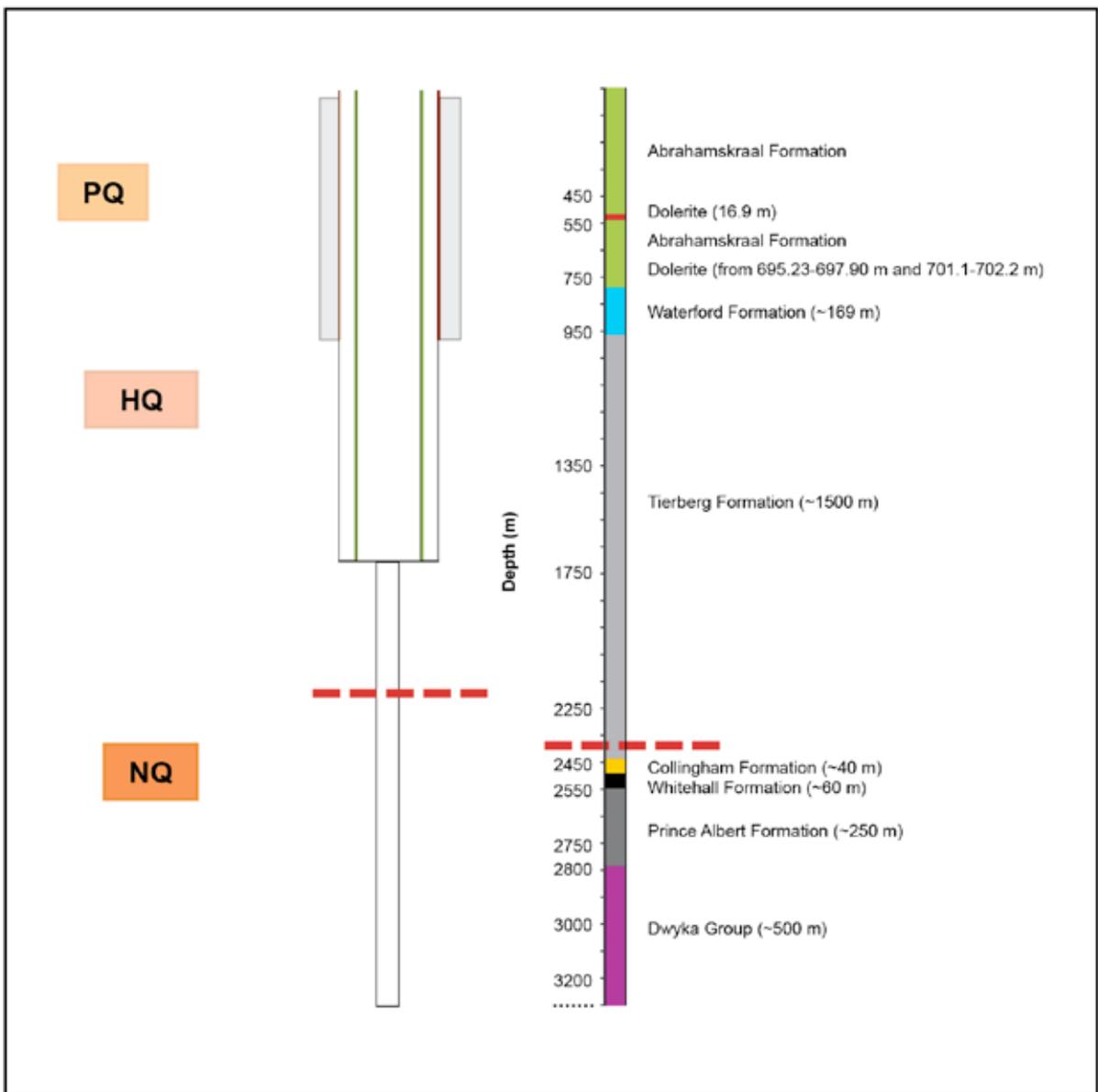


Mbekanyamushumo ya Karoo Deep Drilling yo bvisa mafhungo a ndeme a u khwinisa kupfesesele kwa dzhiḍodzhikhala, ndingo dzi konadzeaho dza ikonomi na ndingo dza masiandaitwa a vhupo

Kha n̄waha une khou sedzuluswa, 2 260.99m ya vhudzivha na gwedzho yo tikiwa nga Thanda ̄a dzhiōodzikhala na dzhiothekhinikhala. Vhudzivha ho endedzwa u ya ̄aiburari ya CGS ya Lushaka ya Ndeme. Vhudzivha ho sikeniwa hu khou shumiswa sikene tshiswa tsha haiphasipekithirala kha tshileludzi. Ngwano ya Data ya u tsa ha mugodi ya dzhiofisikhala na ya phētirofisikhala yo itwa nga maga mavhili, ̄a u thoma ̄a nga kha khethekanyo ya PQ (0-518m) vhukati ha 13 na 23 Tshimedzi 2020 na nga kha khethekanyo ya HQ vhukati ha 1 na 4 Nyendavhusiku 2020 (518-1 164m).

Khonadzeo ya gese

Musi wa u bwa, gese ya methane (CH4) yo wanala kha vhungolo ha 1 734m nga ̄a 8 Phando 2021 na kha 2 325m u ya mafheloni a n̄waha ya muvhalelano. Rigi dza u bwa yo dzheniswa yunithi ya u pambusa gese na u kona u katela u elela u ya nn̄da ha gese. Tsirakhombo na u ̄tola ha gese ho itwa nga n̄ila yone.



Tshifanyiso tsha vhusumbe. Nyolo ya gwedzho ine ya sumbedza tshanduko dza ̄oga ̄a phandekati na vhungolo na Thanda dza ̄lithōodzikhala dzi elanaho na vhungolo ho bwiwaho. Mutalo mutswuku u sumbedza vhungolo ha u bwa u swika zwino. Thevhekano ya lithōodzikhala ire afho fhasi i sumbedza vhungolo zwo ̄disendeka nga mafhungo a re hone.

4.2.2 FULUFULU LA DZHIOTHEMALA LI KONADZEAHO AFRIKA TSHIPEMBE

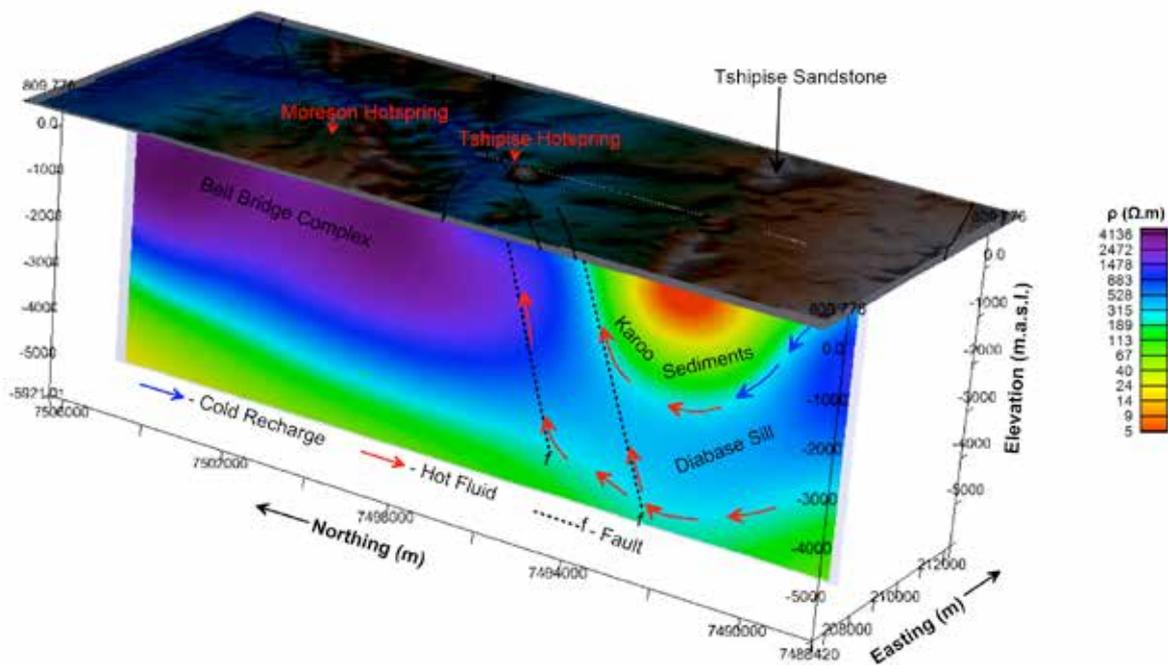
Vhubvo na ndivho: Vha CGS vha shumisa ndivho ya saintsi dza vhupo u dzhenelela kha phambanyiso ya muthatha wa fulufulu nga kha tsenguluso ya zwiko zwa fulufulu li vusuludzwaho zwi nga ho sa fulufulu la dzhiothemala. Ndi tsenguluso dza nga kha fulufulu la dzhiothemala sa fulufulu li swikeleleaho, li fulufhelwaho na li vusuludzwaho u itela u fhiswa thwii ha zwifhaṱo zwa mabindu na zwa vhudzulo. Mushumo waḷo wo engedzwa wa katela mveledziso ya muḱagasi wa tshikalo tsha tshumiso, une wa phaḱaladzwa nga kha u fhisana u fholisa zwishumiswa na nyengedzedzo ya maitele a nḱowetshumo dzo fhambanaho.

Kha nḱwaha une wa khou sedzuluswa, ngudo dzo lingedza u pfesesa vhushaka vhukati ha nḱila dza nyelelo dza zwiluḱi zwa dzhiothemala na zwiimiswa zwa dzhioḱodzikhala zwa ndeme zwi re tsini zwa zwipise zwi ḱivheaho (sa Tshipise tshi fhisaho tsha Vundu la Limpopo), u fhaṱa tshiedziswa tsho ṱanganelanaho tsha muṱalukanyo wa dzhiothemala ya sisiteme ya dzhiothemala ya Tshipise na u ṱalutshedza mbonalo dza nga nḱa dza sisiteme ya dzhiothemala. Zwipikwa izwi zwo swikelelwa nga kha mafhungo a saintsi dza vhupo u itela u sumbedzisa zwiko zwa fhasi zwa enthalpi nga kha

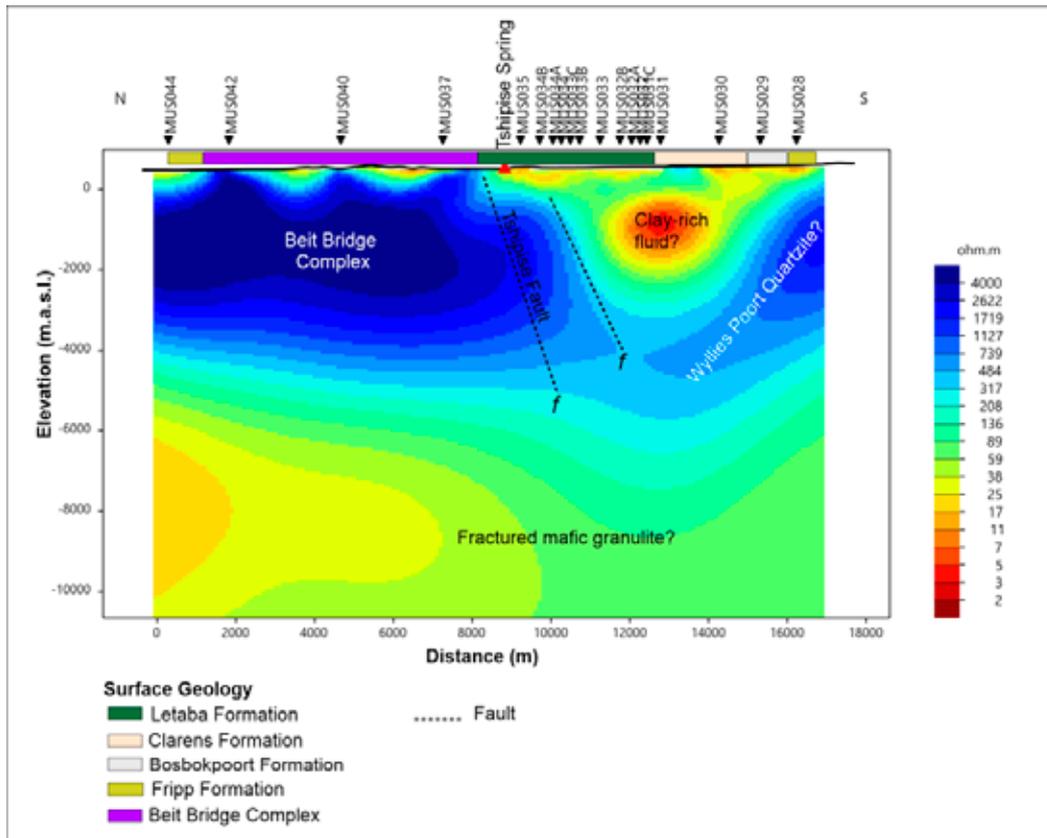
musaukanyo wa khemikhala kha maḱi na vumba la dzhiothemala.

Tswikeleli na mavhala a nngwe: Tshiedziswa thangeli tsha dzhioḱodzikhala tsho bveledziswa kha nḱwaha une wa khou sedzuluswa (Tshifanyiso tsha vhumalo). Data ya Magnetotelluric (MT) yo wanala kha vhupo ha Tshipise nga 2019 na u ṱalutshedzwa, zwe zwa sumbedzisa zwavhuḱi mukano vhukati ha thevhekano ya Karoo na matombo a suprakhiresitala a Beit Bridge Complex (Tshifanyiso tsha vhuṱahe). Lwa vhupo, Tshipise tsha maḱi a fhisaho tshi kha mukano. Data ya MT na yone yo wana zwivhumbeo na nzudzanyo na fhethu ho ṱalutshedzwaho hu songo dzudzana tsini na tshisima tsha Tshipise, zwine zwa nga vha thagethe dzavhuḱi dza u bwa.

Data ya MT yo dovha ya sumbedzisa uri vhungolo vhu kha mutheo wa matombo a sedimethari a Karoo une wa sa pfuke 3.6km. Thempheretsha ya pfaraluḱi kha vhungolo uho yo anganyelwa nga u ngona ya khanedza ya thermal silica geothermometers. Ngauralo thempheretsha dza khomphiyutha dzo anganyelwa hu tshi shumiswa thekiniki ya khanedza ya themala na chalcedony geothermometer, ye ya bveledza thempheretsha dzi elanaho. Quartz geothermometer yo anganyela uri pfaraluḱi i 5km fhasi ha nyalo.



Tshifanyiso tsha vhumalo. Tshiedziswa thangeli tsha muṱalukanyo tsha vhupo ha mbonalo ya dzhiothemala ya Tshipise.



Tshifanyiso tsha 9. Tshilai tsha nzimo u bva kha tshiedziswa tsha u hana tsho dzhia phurofaiji ndapfu L000. Ho katelwa vhukhaxhi ha ndeme na u vhumbiwa ha miñwe

4.2.3 TSENGULUSO DZA ZWI SONGO DZULISEAHO ZWA DZHIKHEMIKHALA

Vhubvo na ndivho: Tshipikwa tshihulwane tsha tsenguluso dza zwi songo dzuliseaho zwa dzhiokhemisithiri ho vha u pfesesa tshitaila tsha u ita minerala dza zwi songo dzuliseaho zwavhuḏi zwoṱhe zwo topolwaho hu tshi shumiswa tsedzuluso dza dzingu dza saintsi ya vhupo. Zwi songo dzuliseaho zwo vhalaho zwo nangiwa kha data ya dzhiokhemisithiri ya mavu hu na ngudo dza masia manzhi dzi tevhelaho dzine dza itwa nga 2020/21 u itela zwi songo dzuliseaho zwa dzhiokhemikhala zwa Kenhardt, Ga-Ramokoka na Witfonteinrant. Zwi songo dzulisea zwa dzhiokhemikhala zwa Kenhardt Ni-Cr zwo topolwa u bva kha ṱhoḏisiso ya dzhiolodzhikhala ya dzingu ine ya sumbedza khroumu i songo dzulisea (Cr) na nikili (Ni) kha mavu 80km vhukovhela ha Kenhardt. Zwi songo dzulisea zwa Witfontein Cr-Ni zwo topolwa u bva kha mimapa ya dzhiokhemikhala ya dzingu ya tshikhala tsha 1:250 000 kha vhupo ha Thabazimbi. Zwi songo dzuliseaho nga mafic-ultramafic Witfonteinrant dyke ine ya khou ela vhubvaḏuvha-vhukovhela ine ya lingana 100km.

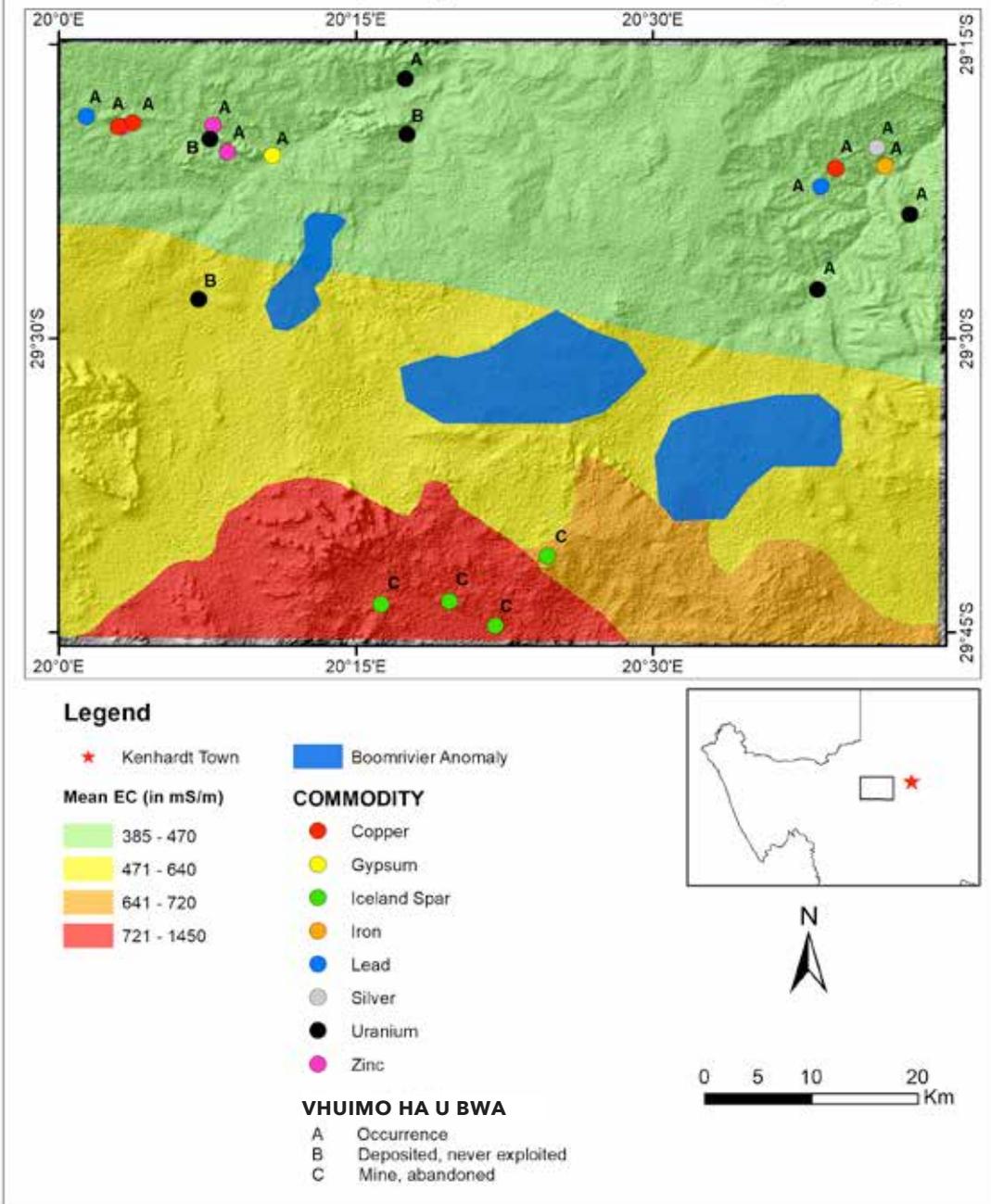
Tswikelelo na mavhala a nngwe: Tsenguluso dza nnḏa dzo topola uri zwi songo dzuliseaho zwa Kenhardt zwi ṱangana na midavhi yo ṱandavhuwaho, ya luvhata ya muṱavha mutswu u hwasaho une wa livhanyiswa na (~10-25m), zwigwada zwa fhasi zwa matombo a gabbro ane o sokou laṱekana u mona na mudavhi. Thekiniki ya MT yo kona u sumbedzisa phaḏaladzo ya fhasi ha nyalo ya zwi songo dzuliseaho zwa Boomrivier zwa dzikhemikhala zwavhuḏi nga maanḏa. fhethu hu iteaho ho vhalaho hune ha bva kha vhungolo hune ha thoma kha 1km u swika kha2km ho ṱalutshedzwa sa fhethu ha u ita minerala wa salifeidi. Zwi khou themendelwa uri kha phirisavhududo dzo sumbedziswa dzo sumbedze kuvhumbela kwazwo. Ngudo dza ndeme ya maḏi ṱavhela na dzone dzo itwa kha vhupo ha ngudo (Tshifanyiso tsha vhufumi).

Vhubuḏekanyi vhuraru ha mavu ho itwa sambula u mona na Witfonteinrant dyke u itela u wana lushaka lwa mugodi u itela u vhona methala nwa nga fhasi. Vhubuḏekanyi ho vha hu na sambula dza mavu dza 40 kha ya 3km. Maitela a Cr, Ni na Co o dovha hafhu a khaṱhisedza u itea ha zwi songo ḏowelea ha mugodi u mona na vhubuḏekanyi hoṱhe vhuraru.

Vhuñwe vhuñzani ho dzinginya uri salifadisasheni i nga vha yo itea kha mugodi kha vhubuḁekanyi C. Zwi songo ḁoweleaho zwa Cr-Ni zwi khou tikedzwa nga mugodi As, Zn na Ni kha vhubuḁekanyi ha C zwo dzinginya uri, nyimele dzavhuḁi, saḁifadaisesheni i nga kha ḁivha yo itea musi wa u ḁhukhukana nga zwipiḁa ha magumo. U sa vha hone ha zwi songo dzuliseaho izwi kha vhubuḁekanyi ha A na B zwo dzinginya uri nyimele a dzo ngo

Dzula dzi dzavhuḁi u itela saḁifadaisesheni. Mawanwa o sumbedza uri hu na khonadzeo ya masalela a Ni u mona na Witfonteinrants ultramafic dyke, hu na Ni-sulphides fhethu hune zwa anzela u ita hone kha mugodi. Tshiedziswa tsha Uitkomst Complex Ni, pulatinamu (Pt), phaladiamu (Pd) na u ita minerala wa mutheo zwenezwo, tshi nga, shuma kha vhuñwe vhuḁo hune zwa anela u ita u tsa na mugodi wa Witfonteinrants ultramafic dyke.

Mapa wa Ndeme ya Madithavhela u na Data ya Minerala ya u Bwa



Tshifanyiso tsha vhuñwe. Mapa wa ndeme ya maḁithavhela a vhuḁo ha ngudo, une wa sumbedza u sa dzulisea ha Boomrivier na fhethu ha u bvedza minerala.

4.2.4 VHULUNGWA HA TSHUMISO YA U THUBWA HA KHABONI

Vhubvo na ndivho: Hu na ikonomi nyangaredzi ya ndowetshumo yayo, Afrika Tshipembe ndi tshinwe tsha zwibviswa zwi hulwanesa zwa gesepfuḏi kha dzhangho, nga n̄wambo wa u ḏisendeka nga zwiko zwa malasha zwinzhi u itela u bveledza fulufulu na ndowetshumo ya zwivhaswa zwa sinthethiki khulwane. Naho hu na u ḏisendeka nga malasha, Afrika Tshipembe lo ḏikumedzela kha zwa tshanduko ya kilima na u fhungudza u bviswa ha gesepfuḏi nga u fhira 50% kha miṅwaha ya 30 i tevhelaho. Pulane iyi i katela phambanyiso ya zwiko zwa fulufulu, Afrika Tshipembe li ḏo dzhenelela kha Tshanduko kwayo u ya kha ikonomi ya khaboni thukhu. Tshanduko thukhu i ḏisendeka nga thekhinoḏzhi dza malasha, sa vhubveledzi ha n̄tha, thekhinoḏzhi dzi bvisaho malasha maṅku a mveledzo ya u thuna khaboni, thekhinoḏzhi dza tshumiso na u vhulungwa (CCUS). Thod̄isiso ya CCUS yo pika u fhungudza gesepfuḏi ine ya bviswa u ya kha dzingamufhe nga u thuba gese na u vhulunga zwavhuḏi fhasi. Musi wa 2020/21r, vha CGS vho ita thod̄isiso ya CCUS, u ela hafhu saithi dzo topolwaho sa khonadzeo ya u vhulunga ha CCUS.

Tswikelelo na mavhala a nngwe: Nga u shumisa mafhungo manzhi a dzhioḏzikhala, ho topolwa saithi ntswa dzo vhalaho kha Vundu la Mpumalanga, haya ha vhunzhi ha migodi ya malasha na tshiko tshihulwane tsha zwihasaladzi zwa gesepfuḏi. saithi dza u vhulungela dzi katela matombo a muṅo a pfukisaho maḏithavhela, simi dza nga murahu ha u ita gese na hu vhulungwaho basalathi. U itela u tikedza hafhu thekhinoḏzhi ya CCUS na tshumiso yayo Afrika Tshipembe, pulanti i khou dzinginywa ine ya ḏo sedza balalathi tsini na

Secunda (Tshifanyiso tsha vhufumithihi), tsini na feme dza zwibviswa zwa sinthethiki zwine zwa vha tshiko tshihulwanesa tshi bviswaho kha l̄ifhasi. Saithi i dovha ya swikelela thod̄ea dza u thoma muhasaladzo wa gesepfuḏi kha dzingu.

Tsenguluso dza dzhioḏzikhala dzo sumbedzisa khonadzeo ya pfaraluḏi ya u vhulunga basalathi zwine zwa nga tikedza, kha gumoṅku, thani dza miḷioni dzo vhalaho dza gesepfuḏi. hu na zwiitisi zwo vhalaho zwa matombo a basalathi uri a dzhiwe kha khonadzeo ya pfaraluḏi u itela gesepfuḏi ya anthiropodzheniki (CO₂). Tsimbi, khal̄isiamu na minerala dzo ḡalaho magesiamu dzi fhindula u ṱavhanya kha CO₂ u ita minerala dza khaboneithi. Phimo ya u nyanyuwa i itea nga u ṱavhanya vhukuma u fhira zwi pfukisa maḏithavhela zwa maḏi a muṅo zwine CO₂ yo dzheniswaho i nga dzhia miṅwaha ya zwigidi zwo vhalaho zwa miṅwaha musu i sa athu u ṱanganyiswa na minerala wa khaboneithi. Kha matombo a basalathi, u nyanyuwa uhu hu thoma ho tou fhela awara yo dzheniswa. Luvhilo ulu lwa u nyanyuwa lu amba uri hu na khohakhombo i elanaho na u dzhenisa zwine zwa vhangha mupfuluwo u bva kha pfaraluḏi. matombo a basalathi o phaḡalala u mona na l̄ifhasi. Hu na u itea ho hulelaho hu ne ha amba pfaraluḏi dzine dza nga vha hone na u nga tikedza CCUS kha vhupo hune kale ho vha hu sa humbuliwi uri hu na khonadzeo ya u vhulunga.

U wanala ha u tatamudza ha data ya dzingamufhe na ya nyalo ya khemikhala yo dovha ya konisa u ṱola thanfeli ha vhupo ha mutheo. Thekhinoḏzhi dza CCUS kha dzingu dzi nga livhana na masiandaitwa a si avhuḏi a vhupo.



Tshifanyiso tsha vhufumithihi. Nyolo ya CCUS yo dzinginywaho ya pulanti ya tsini na Leandra, Vundu la Mpumalanga.

4.3 THANDELA DZA NDIINGO YA ZWIKO ZWA MINERALA

4.3.1 THANDELA YA SAINTSI YA VHUPU YA NGA NGOMU SHANGONI

4.3.1.1 Thandela ya Griqualand West

Vhubvo na ndivho: Thandela Griqualand West Nzudzanyo ya Saintsi ya Vhupo i khethululana na talula minerala, fulufulu, khombo, vhuinzhiniara, sisiteme dza vhupo na vhupo ha Griqualand West. Mbekanyamushumo ya nzudzanyo ya dzhiojodzikhala i katela nzudzanyo ya saintsi ya vhupo na nzudzanyo ya minerala. Nga maanḁa, zwiḁaluli zwa thandela zwine zwa konadzea zwa minerala i nga ho sa daimane, ayoni (Fe) na manganise (Mn) na tshumiso ya mavu, zwa vhulimi na maḁiḁhahela na kupfesesele na ngudo dza zwa vhupo u itela mveledziso ya themamveledziso na nyaluwo ya ikonomi. Griqualand West Basin i a konḁa vhupo hu konḁaho hune ha fara malaḁwa mahulwanesa a jifhasi a ikonomi. Fhethu ha u guda hu na thevhekano i konḁaho ya paḁekanaho, ya gireidi ya fhasi yo shandukaho na u shandukiswa tshivhumbeo ya Transvaal na khethekanyo dza Olifantshoek Supergroup, khethekanyo dza khemikhala dzi imelaho vhupo ha maḁini a songo tsesaho (u bva kha maḁi a songo tsesaho na u tsesa a jifhasi) na matombo a mithuthubo a nga nḁha malaḁwa a Senozoiki o kuvhatedzwaho.

Tswikelelo na mavhala a nngwe: Musi wa 2020/21 ḁwaha ya muvhalelano, thandela ya Griqualand West yo dzudzanyiwaho na u ḁalutshedzwa kha sethe dza data dzi dzulaho dzi hone dzine kanzhi dza vha dathabeisi dza CGS nga kha nga kha vhudzivha ha gwedzho, mapa ya tshikalo tsha 1:250 000 ya dzhiojodzikhala, ENGEODE (dathabeisi ya vhuinzhiniara ya dzhiojodzhi), SAMINDABA (dathabeisi ya malaḁwa a minerala ya Afrika Tshipembe) na data ya dzhiofisikhala. Zwiḁwe zwiko zwa nga nḁa zwa data zwi katela dathabeisi yo wanalaho kha inthanethe (tsumbo, hu vhulungwaho maḁiḁhahela a lushaka) data ya sathelaithi (tsumbo, Landsat 8, Aster, Sentinel 2). ḁhanganelano na u sa shumiswa zwavhuḁi ha dathabeisi dzo faranaho na thagethe dza u tevhela dzo topoliwaho kha saithi dzo sedziwaho u itela vhubveledzi ha tshikalo tsha 1:50 000-tsha mapa wa dzhiojodzikhala na u edzisa vhupo hu re na khonadzeo ya minerala ho imaho ngauri. Ha u fhedzisela ho bvelela vhukuma kha vhupo uho hu re na khonadzeo ya lidi zinki (Pb-Zn), Fe-Mn na daimane dza musalasala. Saithi dzo topoliwaho zwa zwino a dzo ngo katelwa nga mugodi u re hone na

thendelo dza tzedzuluso. thandela yo bveledza mapa ya dzhiojodzikhala thangeli ya tshikalo tsha 1:50 000-tsha mapa wa dzhiojodzikhala, ine wa ḁo sedzuluswa na u ganḁiswa lwa tshiofisi kha ḁwaha ya muvhalelano u tevhelaho.

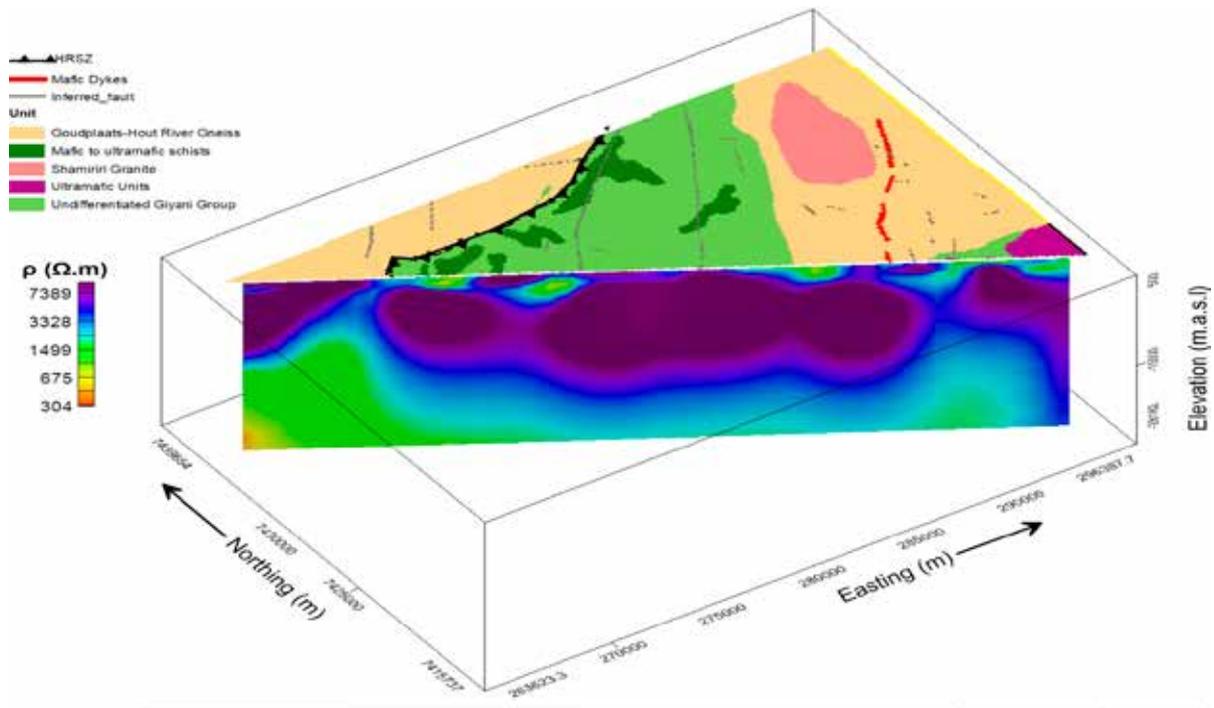
4.3.1.2 Nzudzanyo ya Giyani Greenstone Belt

Vhubvo na ndivho: Thandela ya Giyani Integrated Mapping, ine ya katela vhupo ha 2 800km² u mona na Giyani devhula kha Vundu ḁa Limpopo, i tikedza nyaluwo ya ikonomi na vhusireledzi ha maḁiḁhahela na u bveledza vhangaphanḁa ha vhupo.

Tswikelelo na mavhala a nngwe: Thandela yo sedza kha nzudzanyo dza dzhiojodzikhala dzo dzudzanywaho kha Giyani Greenstone Belt (GGB), u topolwa ha thagethe dza minerala nga u shumisa sethe dza data dza mavu dza dzhiokhemikhala, tzedzuluso dza dzhiofisikhala dzo sedzaho matombo o tsaho a khurusitala, ngudo dza haiḁorodzhijodzikhala na dza vhupo. Data yo kuvhanganyiwaho yo livhana na u shotha ha maḁi na masiandaitwa a vhupo na nyito dza migodi dzi siho mulayoni dza kale na dza zwino.

Tsedzuluso ya MT kha mbonalo dza khrisitala dzo tsaho (>15km) dzo itwa kha tshipiḁa tsha vhukati tsha GGB u mona na phurofaiji i swikaho 30km yo sedzaho vhuokvhela-devhula na vhubvaḁvha-tshipembe. Tzedzuluso yo bveledzwa tshiedziswa tsha ḁhanganelo tshe tsha sumbedzisa zwivhumbeo dza dzhiojodzikhala kha vhupo. Tshiedziswa tsha u hana tsho ḁhanganelanaho tsho tumbula zwivhumbeo zwa nḁha ha nyalo zwi re na khonadzeo ya u vhulunga u ita minerala dza musuku tsumbo hu langiwaho (Tshifanyiso tsha vhufofumbili). REE dza 12, Cr- Ni na thagethe dza minerala wa maginesiamu dzo gudwa na mvelelo dza dzhiokhemikhala dza khaḁhisedza dziḁwe thagethe dzi fulufhedzisaho. U bwa hu ḁo thoma nga ḁwaha wa muvhalelano wa 2021/22 kha minerala muthihi wo sedzwaho wo khaḁhisedzwaho u nga vha na khonadzeo ya politiki.

Vhupo ha Giyani ndi ḁiḁwe dzingu kha Vundu ḁa Limpopo hune ha kwamea nga ḁhahelelo ya maḁi. Maḁiḁhahela na maḁi a fhasi o sedzuluswa ha wanala uri maḁi a hone kanzhi a na alikalini na u vha na aseniki (a nḁha ha Maga a Lushaka o teaho a Afrika Tshipembe) [SANS] kha u nwa - SANS 241:2015) kha madzingu a tsini na vhupo ha migodi ha kale. Vha CGS na vhalanguli vho teaho vha tea u themendela maga a u lulamisa.



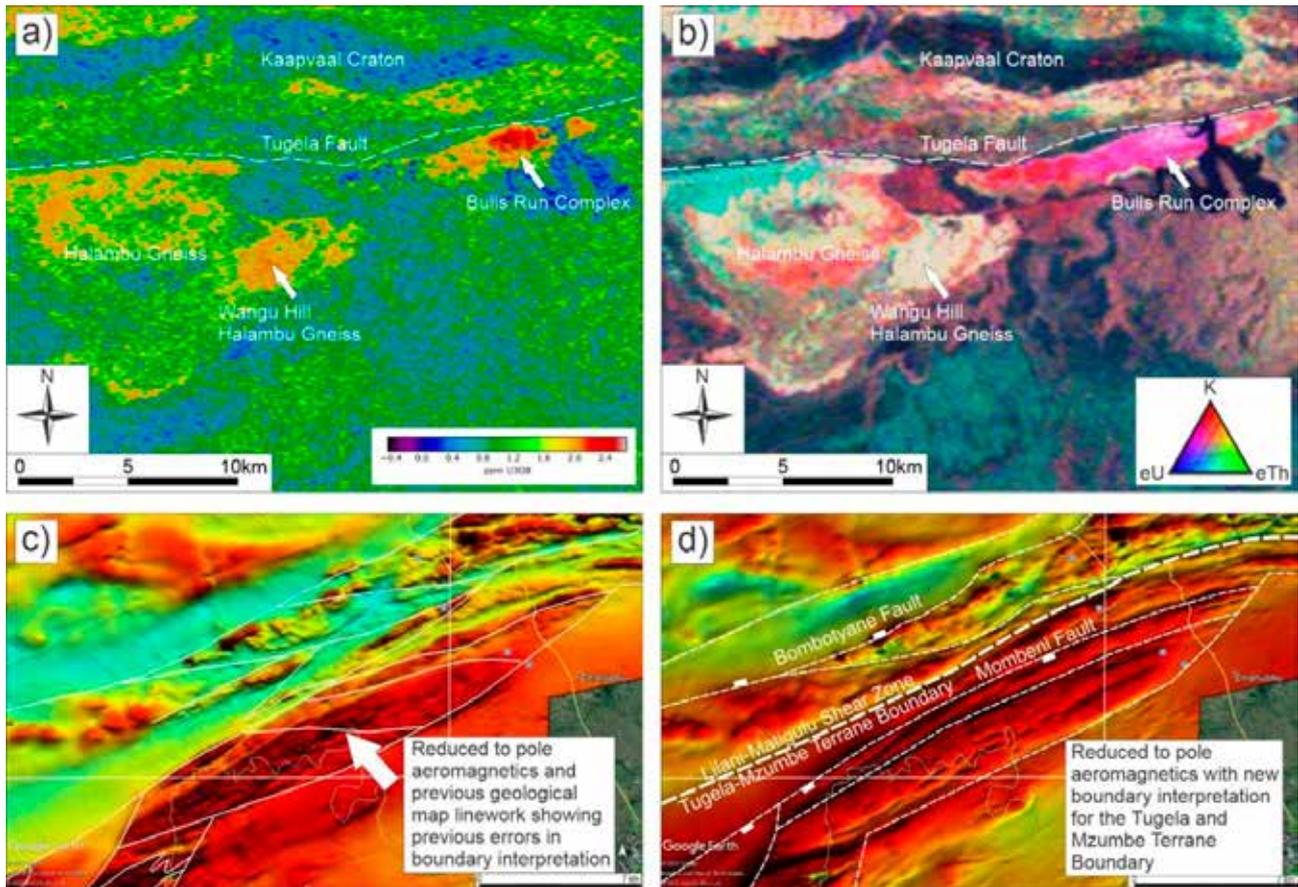
Tshifanyiso tsha vhufumimbili. Tshifanyiso buḁa tshi sumbedzaho kuvhonele kwa dzhioḁodzhi, tshivhumbeo na u hana. Mbambedzo i thusa u eḁanyisa vhukwamani ha dzhioḁodzikhala vhu ḁivheaho na zwivhumbeo zwi ḁivheaho/zwi humbulelwaho

4.3.1.3 Thandela ya Nzudzanyo dza Saintsii ya vhupo ya vhukati ha KwaZulu-Natal

Vhubvo na ndivho: Thandela ya masia manzhi ya Nzudzanyo ya Saintsii dza vhupo ya Vhukati ha KwaZulu-Natal Geoscience i sumbedza khonadzeo dza dzhioḁodzikhala na dza mapa nga kha data ya ndeme ya nḁha ya muyani na data ya radiometiriki na mafhungo a dzhioḁodzikhala. Nga 2020/21, thandela iyi yo katela tshikalo tsha 1:50 000-ngei kha vhupo ha mapa wa bambiri ḁa Eshowe (2831CD) KwaZulu-Natal. Dzhioḁodzhi ya Eshowe ine ya ḁalulwa nga matombo u bva kha Palaeo-Archaeon u ya zwino, hu na ḁitholodzhi dzo vhalaho dzine dza fara u itea ha minerala dzo fhambanaho (sa tsumbo: musuku, zwirikhoniamu na niobiamu) na zwaitaila zwa u ita minerala. Thandela yo sedza kha nzudzanyo dza dzhioḁodzhi u itela u pfesesa ndango dza tshivhumbeo dza siḁiratigirafiki na mumono wa thevhekano ya maitela a minerala kha vhupo, zwine zwa dzhenelela kha u ḁalulwa kuitetshela kwa minerala na u konisa mveledziso ya minerala i sa nyetḁhi.

Tswikelelo na mavhala a nngwe: Tsedzuluso yo dodombedzwaho yo dzhiwa ya mvelaphanḁa ya ḁhalutshedzo dza dzhioḁodzikhala kha vhupo.

ḁhalutshedzo ya ḁitholodzhi dza nga fhasi dzo ḁanganana na mapa wa data wa radiometiriki wa Ternary potassium-uranium-thorium (K-eU-eTh) zwo tendela u topolwa ha fhethu hu re na zwipiḁa zwa radio zwihulwane (e.g. u sa dzulisea ha U hu hulwane) hu elanaho na Bulls Run Complex na Halambu Gneiss, zwine zwa nga vhanga tsedzuluso ya matshelo u itela U, Zr, Nb, Zn na REE (Tshifanyiso tsha 13a na 13b). Zwiḁwe hafhu data ya maginethiki ya muyani ḁhalutshedzo yayo yo tendela ḁhalutshedzo hafhu ya foḁothi ya nga murahu ha Karoo yo ḁowealeho na u vusuludzwa, mikano ya mavu a khristala o tsaho ane a khethekanya Mavu a Mzumbe Terrane kha a Tugela (Tshifanyiso tsha 13c na 13d). Mukano uyu u thulana na Vhupo ha Lilani-Matigulu Shear na u elana na zwipise zwa themala. ḁhalutshedzo ntswa ya vuhone ha zwisima izwi zwa dzhiothemanala dzinginya khonadzeo ya tsedzuluso ya haiḁirodzheni (H2) kathihi na mbonalo ya tshivhumbeo yo vusuludzwaho ine zwino ya imelelwa nga folothi dzo ḁowelelaho dza nga murahu ha Karoo. Mukano u sumbedzwa kha Tshifanyiso tsha 13d mbonalo dza engedzea dza dzhena kha Lilani Lineament, dzine dza vha na zwipise zwa themala zwa Lilani.



Tshifanyiso tsha 13. a) U_3O_8 mapa wa radiometiriki, Bulls Run Complex na Halambu Gneiss. b) Halambu Gneiss kha dzingu la Wangu Hill hu a sumbedzwa. Kha vha dzhieie ntha u sa dzulisea ha U_3O_8 (2.4ppm U_3O_8) nga ngomu ha Bulls Run Complex. c) Mapa wa eromagnetiki wo fhungudzwaho (RTP) u sumbedzisaho a nzudzanyo ya kale ya dzhio lodzhikhala na u bva kha mapa wa dzhiodainamiki wa tshikeili tsha 1:250 000 wa mapa wa dzingu. d) Thalutshedzo dza data ya ntha ta RTP ine ya sumbedza u sa fana ha thirasithi khulwane yo topolwaho nga Matthews na Charlesworth (1981) ine ya khethekanya Mapumulo Terrane (tshipembe ha mukano) u bva kha Tugela Terrane (devhula-tshipembe ha mukano).

4.3.1.4 Kuṭalulele kwa lithosifia ya Afrika Tshipembe

Vhubvo na ndivho: Thandela iyi i sumbedzisa tshivhumbeo tsha lithosiferiki tsha khristala u itela u topola khonadzeo ya minerala miswa. Tshipiḡa wa vhukovhela devhula ya Vundu la Northern Cape tsho topolwa sa tsha ndeme u itela 2020/21 zwa masheleni na mveledziso u livhanyiswa na zwiedziswa zwa sisiteme dza u ita minerala u itela minerala dza matshelo.

- Vhuṭaluli ha mumono wa thekithoniki wa Vundu la Namaqua-Natal Metamorphic (NNMP), mavu aḷo na mikano yaḷo ya ndeme u fha mutsiko vhuphara ha minerala kha mavundu na u pfesesa ndango dza zwivhumbeo zwa dzhio lodzhikhala kha malaṭwa a minerala lwa tshifhinga tshilapfu.

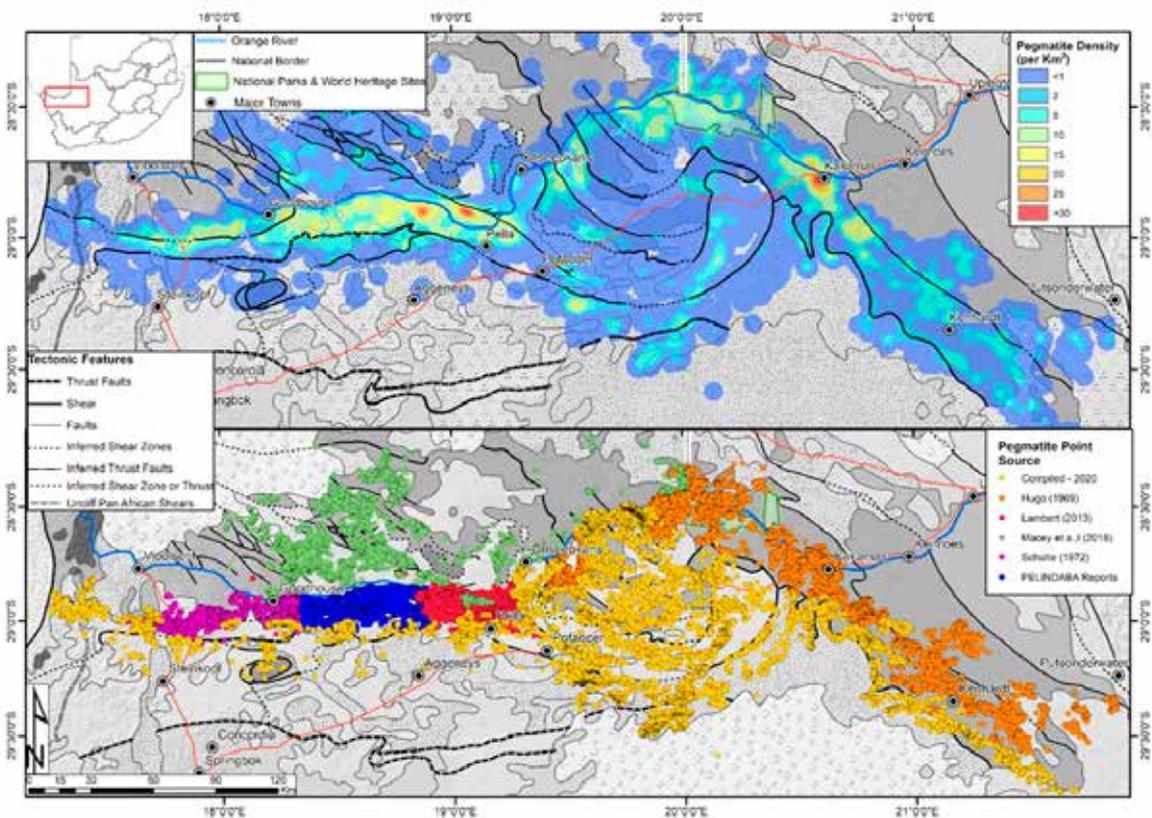
- Vhuṭaluli ha Orange River Pegmatite Belt u tikedza tzedzuluso ya beṭiri na ndowetshumo dza thekhino lodzhi ya miḷedzoni.
- Vhuṭaluli ha malaṭwa a sedimenthari ekisihalathivi (SEDEX) na saḷifadi nnnzhi ya voḷikhanodzheniki (VMS) kha vhupo ha Adzhenisi na Ariatshapa, u itela u pfesesa methala dza mutheo dza ore-genesis kha vhupo na zwivhumbi zwaho.
- Vhuṭaluli ha matombo o paḡuwaho a pfukisaho maḡiṭhavhela u tikedza tzedzuluso dza maḡiṭhavhela.

U ṭanganyiswa ha sethe dza data dza dzhiosainthifiki (dzi nga ho sa MT, eḷekiṭhiromaginethiki dza muyani, dzhio lodzhi dzo sumbedziswaho na zwivhumbeo, (data ya dzhio lodzhikhala na

dzhiohaiḍiroḷodzikhala) ndi ya ndeme kha u topola thagethe ntswa dza minerala, na u bveledzwa sisiṱeme dza u ita minerala dzapo na dza dzingu kha mimapa i ḍaho.

Tswikelelo na mavhala a nngwe: Thandela yo dzumbulula nyolo dza tectonostratigraphic dza vhupo ha ngudo na u vhea kha vhungomu ha tectonic zwa mveledziso ya tshiimela tshi ḍivheaho tsha malaṱwa a lushaka lwa SEDEX- na VMS- a musina. Sisiṱeme dza minerala, nzudzanyo dza zwino dza nṅa dzo ṱangana na u sedza u kule, dzhiofisikisi

ya dzingu na dzhiokhemisiṱiri zwo topola fhethu huswa hu re na Orange River Pegmatite Belt, zwe zwa sumbedza u fhira 67% kha zwe zwa humbulelwa u thomani (Tshifanyiso tsha vhufumiṱa). Tsedzuluso yo dzhenelelaho ya sisiṱeme ya u ita minerala ya pegmatite yo bveledza nyendedzi thangeli kha u ṱoḍisisa vhupo hu faraho pegmatite nga kha thekhiniki dza tsedzuluso dza miledzoni. Ngeno zwiko zwa dzingu zwa maḍiṱhavhela zwino zwi tshi pfeseswa, mushumo u ḍaho u ḍo ṱalula zwiko zwa maḍi kha dzingu na u vha tsini hazwo na malaṱwa o vhonehlo.



Tshifanyiso tsha vhufumiṱa. Tshileme tsha tshikhalani tsha pegmatite Orange River Pegmatite Belt nga km², tshine tsha sumbedza tshileme tsha pegmatite maelana na zwiwhumbeo zwa ndeme zwa dzingu zwa NNMP.

4.3.1.5 Thandela ya Maluti-a-Phofong ya nzudzanyo ya saintsi ya mupo

Vhubvo na ndivho: Thandela yo ṱanganelanaho ya Nzudzanyo ya Saintsi ya Vhupo ya Maluti-a-Phofong i dzhia ṱhoḍisiso dza ndeme dza nṅha dza saintsi ya mupo u itela u livhana na khaedu dza ndeme dza lushaka. Tshipikwa tshihulwane ndi u bveledza mafhungo a dzhiḷodzikhala u itela u topola litholodhi dzi re na khonadzeo dza sisiṱeme dza u ita

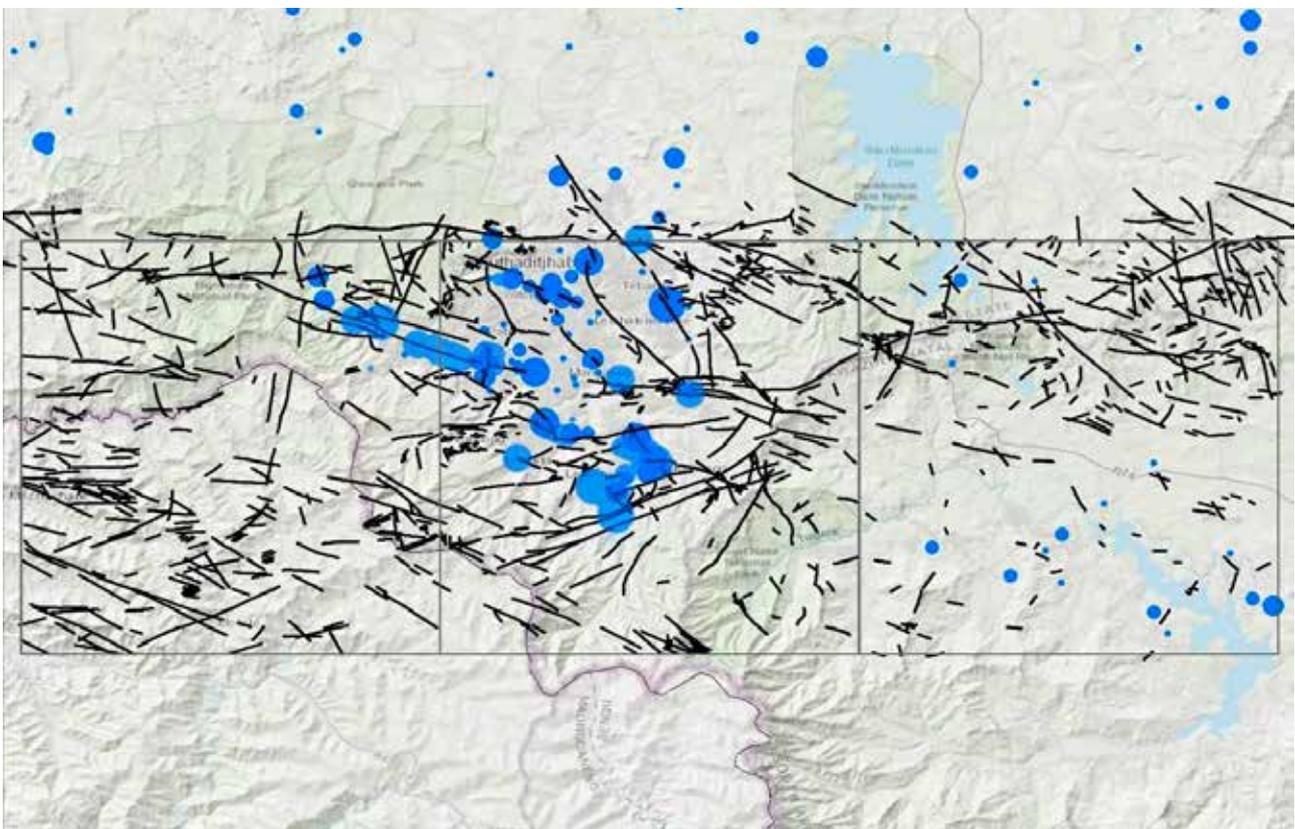
minerala dzi songo topolwa na u thoma ndango kha nyelelo na khemisiṱiri ya zwiko zwa maḍiṱhavhela.

Tswikelelo na mavhala a nngwe: Thandela yo thoma u sedza zwiko zwa maḍiṱhavhela, zwo katelwaho kwa ngudo dza vhunzhi ha maḍi, ndingo dza themamveledziso ya maḍiṱhavhela dzi re hone, sambula dza maḍiṱhavhela na misaukanyo miṱwe kha khemikhala. Nzudzanyo dza nṅha, dza tshivhumbeo nga maanḍa dza saintsi ya mupo dzo itwa. Tsenguluso

idzi dzo tikedzwa nga tzedzuluso dza dzhiofisikhala dzo sumbedzisaho nyengedzedzo ya n̄tha ha nyalo ya mbonalo dza dzhioḽodzhikhala dzo vhonehlo. Zwiko zwa ndeme wa maḽiḽhavela zwo sumbedziswa na u langiwa nga zwivhumbeo zwihulwane (Tshifanyiso tsha vhufumuḽahe) zwo ḽuḽuwedzwa vhukuma nga ndango dzo tsaho dza khemikhala. Nga u angaredza, musaukanyo wa sambula dza khemikhala wo sumbedza zwiko zwa maḽiḽhavela kha dzingu zwi konadzeaho nahone hu si na zwipiḽa zwa mipfa zwihulwane. Zwiḽwe hafhu ḽhanganyo yo sumbedza mbonalo dza dzhioḽodzhikhala dzine dza nga langa zwiko zwa nyelelo ya maḽiḽhavela zwihulwane.

Tsha u fhedzisela, nzudzanyo dza tshivhumbeo dzo sumbedza ḽuḽuwedzo ya mutshimbilo wa thekitoniki, we wa bvedza u itea ha vhunzhi ha zwiko zwa maḽi a fhasi kha vhungolo vhuhulwane u fhira ho lavhelelwaho.

Vhungolo uhu vhu elana na khaedu dza kale dza u wana zwiko zwi sa nyeḽhi zwa maḽiḽhavela. Thandela iyi i lavhelelwa u dzhenela kha tzedzuluso ya maḽiḽhavela a sa nyeḽhi na u bvedza mveledziso i shumaho ya themamveledziso. Thandela i ḽo alusa ya kha vhupo vhuḽwe ha dzhioḽodzhikhala vhune ha vha na thaidzo dzi fanaho.



Tshifanyiso tsha vhufumiḽhanu. Mbonalo ya nyalo ya mbonalo dzo khaḽhaho dzo sumbedziswa u mona na vhupo ha ngudo - u itela ndaedzi ya *, Phuthaditjhaba i vhukati ha muḽa. Mitalo yo sumbedziswa yo sedzana na nga maandḽa na northwest-southeast are ine kanzhi yo sumbedziswa sa folothi dza ḽhaselo ya vkhakhi na u humbulelwa u konisa nyelelo ya maḽiḽhavela. Zwitendeledzi zwa lutombo zwi sumbedzisa hu re na maḽiḽhavela, ho anganyelwa u ya nga ha mbuelo nyangaredzi



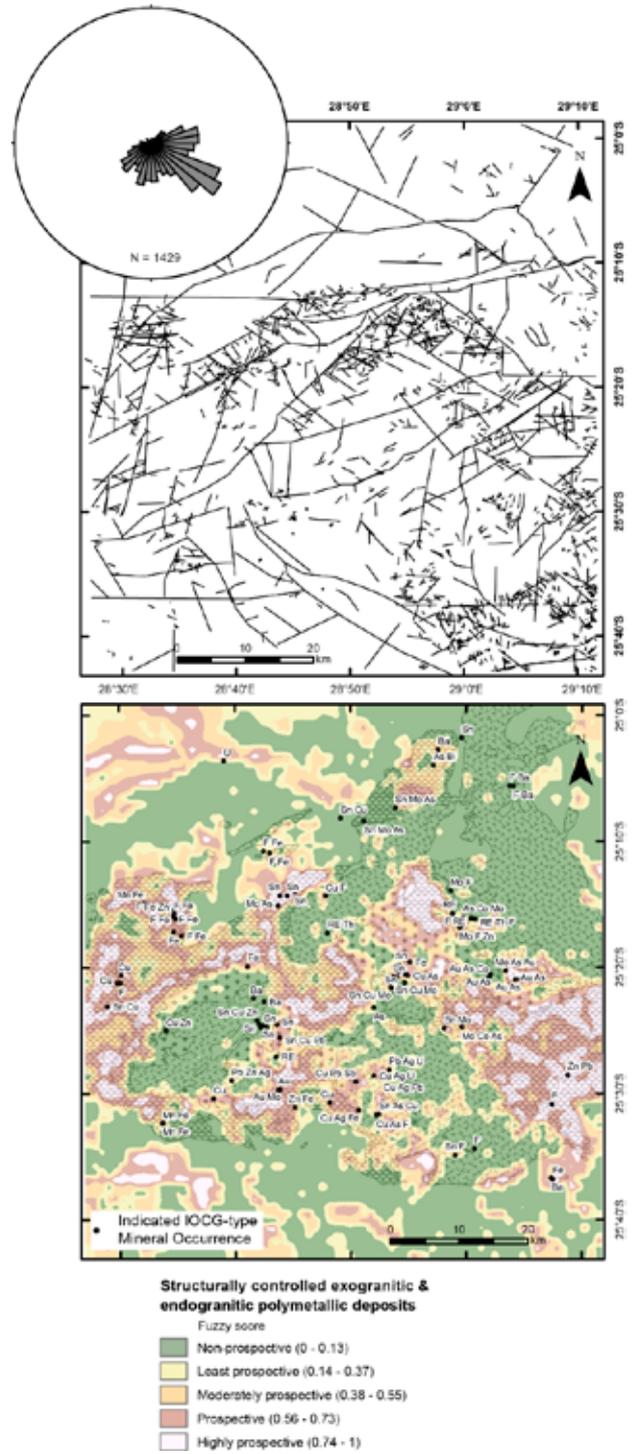
Thandela ya Nzudzanyo ya Saintsia ya Mupo Maluti-a-Phofung yo ḽanganelanaho i lavhelelwa u dzhenelwa kha tzedzuluso dza maḽiḽhavela a sa nyeḽhi na u bvedza mveledziso i shumaho ya themamveledziso.

4.3.1.6 Thandela ya Nzudzanyo ya Bushveld

Vhubvo na ndivho: Thandela ya Nzudzanyo ya Bushveld i guda mumono wa ndango kha sisiteme dza u ita minerala dza magimathiki dza haiḡirothemala, nga maanḡa idzo dzo ḡumanaho na thekhinoḡodzhi dza matshelo dza fulufulu. Giranaithi dza Bushveld dzi dzone dzi dzulaho malaḡwa o vhalaho maḡuku na o linganelaho a phoḡimethaḡiki o itwaho nga Sn-W-Cu-lead-zinc- gold-silver-uranium-fluorite-iron-REEs (Pb-Zn-Au-Ag-U-F- Fe-REEs). Nḡhani ha izwo, ḡiga ḡa mafiki ḡa Bushveld Complex na ḡone ndi vhudzulo ha malaḡwa a iron-titanium- vanadium (Fe-Ti-V) ha ndeme kha mbemba dza maginethiki na zwivhili zwi songo tea. Kuitele kwa muḡalukanyo kwo shumiswaho kha ngudo idzi ku katela thekiniki dza musaukanyo wa tshikhala na ḡhanganyo ya data (zwi re, u vhona data lwa dzhiophysikhala, dzhiokhemikhaḡa na dzhiḡodzhiikhala) u ita tsenguluso dza khonadzeo ya tshikalo tsha dza minerala dza ndeme kha Bushveld Complex.

Tswikelelo na mavhala a nngwe: Fhethu ho thagethiwaho ho vhalaho hune ha dzhiwa sa khonadzeo khulwane ya ulu lushaka lwa u ita minerala ho sumbedziswa (Tshifanyiso tsha vhufumirathi). Nḡwelo mbili dzi vhaalesaho dza u paḡuwa, vhubvha-devhula-vhubvaḡuvha-tshipembe (Crocodile River Fault) na vhubvaḡuvha devhula - vhubvha tshipembe (Steelpoort Fault), zwo shuma mushumo wa ndeme kha pfutelelo na phaḡaladzo ya u ita minerala hu langwaho nga u paḡuwa Cu-Pb-Zn-As-Ag- Au-Sn mineralisation (zwi re. lushaka lwa u ita minerala lwa iron-oxide-copper-gold) kha ḡhanga ya matombo, nga maanḡa kha Tshigwada tsha Rooiberg. Mapa wa tshiedziswa tsha khonadzeo ya minerala kha vhupo u itela u ita minerala hu langiwaho ha endogiranitiki na ekisogiranitiki (Tshifanyiso tsha vhufumirathi). Tshiedziswa tsha khonadzeo tsho humbulelwa zwavhuḡi malaḡwa a vhuimo ha nḡha a Vergenoeg F-Fe-REE, malaḡwa manzhisa a fuḡoraithi ḡifhasini, o vheiwaho kha rayoḡaithi ya Tshigwada tsha Rooiberg. Zwivhili zwo songo tea zwa Fe-Ti-V-zwo pfumaho zwo ḡalutshedzwa nga u shumisa ḡhanganelo ya data ya dzhiophysikhala ya muyani na ya dzhiokhemikhaḡa kha mavu. Tshiedziswa tsha siararu dza dzhiophysikhala tsho sumbedza zwivhili zwi ḡoḡomowaho na u sa sumbedza mbonalo dzi ngaho dza migodi sa zwe zwa humbulelwa. Zwivhili zwo hulela u swika kha 150m fhasi ya mavu nga u denyefhala u swika ±200m. Thagethe dzi konadzeaho dzo sumbedziswa kha mapa ya khonadzeo ya zwiedziswa zwa minerala u itela u ita minerala ha tin-tungsten-fluorite-REE-beryllium (Sn-W-F-REE-Be) hu livhanywaho na (i) khirisḡaḡaizesheni ya zwiko zwa giranaithi zwine zwa

nga vha hone zwo ḡalaho kha zwipiḡa zwa apikhala zwa i dzhenela ha giranathi (ii) zwi elanaho na nḡwelo dza vhupo ha vhubvha devhula.



Tshifanyiso tsha vhufumirathi. Mapa yo ḡanganelanaho i si na vhuḡanzi ya (Cu-Pb-Zn-Fe) na data ya zwipiḡa nga u shumisa tshishumiswaho tsha $Y = 0.5$ u sumbedza lushaka lwa malaḡwa a langwaho kha tshivhumbeo a iron-oxide-copper-gold

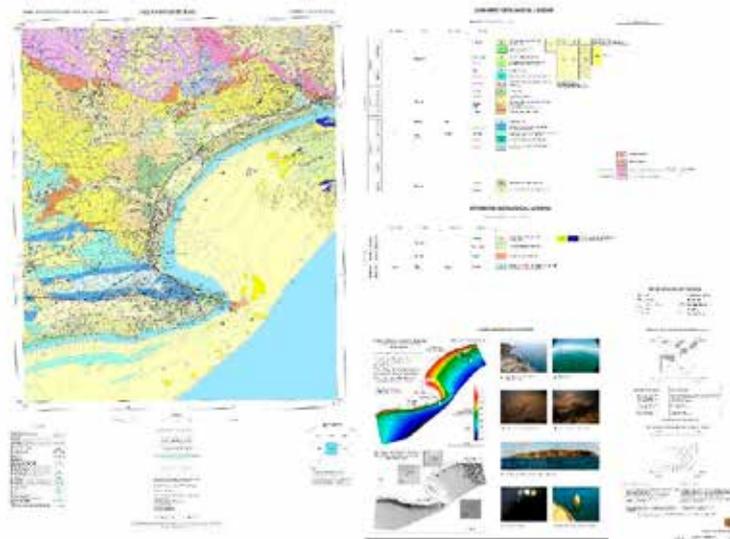
4.4 MBEKANYAMUSHUMO DZA SAINTSI YA VHUPO DZA KHA PHENDELASHANGO

4.4.1 MBEKANYAMUSHUMO YA SAINTSI YA VHUPO YA MADINI

Vhubvo na ndivho: hu na dzangalelo lo engedzeaho la u topola zwiko zwiswa zwa minerala na u bveledzwa vhurangaphanda vha vhupo kha lkonomi ya Lutombo ya Afrika Tshipembe hu da u vhona uri nga ndila dzo vhalaho vhupo vha madanzhe ho imela 'miledzoni ya u fhedzisela'. Naho vhubvedzi ho vhalaho ha dzhangho vhu tshi dzhiela ntha ndeme ya madanzhe a lifhasi (sa tsumbo United Nations Decade ya Ocean Science), hu na u engedzea ha thodea ya u khwathisa nyaluwo ya ikononi nga kha thodiso dzi dzhenaho kha phendelashango na madanzhe a Afrika Tshipembe. Hezwi zwi do dovha zwa lkonomi ya lutombo ya shango na u thusa kha zwiirathedzhi zwa u khwinisa vhupulani vhu pfadzaho u itela u livhana na mishushedzo kha themamveledziso na zwitshavha zwa kha phendelashango zwi diswaho nga u takuwa ha levele. Zwiwe hafhu, thekhinolodzhi dza u sumbedza fhasi ha lwanzhe dzo khwinisea vhukuma zwino nga maanda hu na u divhadzwa ha multibeam echosounders.

Tswikelelo na mavhala a nngwe: Nga ngoho 2020/21, Vha CGS vho engedza nzudzanyo ya vhukатели nga 0.05%. fhedzi, u swikelela a ho ngo fusha nga 0.1% ho sedzwa uno nwaha. Hu na u iswa ha vesele ya thodiso ya CGS kha 2021/22, zwo sedzwaho kha nzudzanyo dza kukatelele zwi tea u vha khwine zwihulwane.

Kha nwaha une wa khou sedzuluswa, khandiso ya mapa wa dzhiolodzhikhala u si na mukano wa nga ngomu shangoni na kha phendelashango ya Mossel Bay (Tshifanyiso tsha vhu fumisumbe) yo fhedzisa. Thekiniki ya sabusitireithi ya u sumbedza fhasi ha lwanzhe yo khunyeledzwa na u lingedzwa kha tshikalo tshapo. Thekiniki iyi ya u gwa nga Mutshini i tanganyisa data ya hairoakhositiki, hu tshi katelwa multibeam bathymetry, back-scatter na side-scan sonar sa zwi dzheniswa zwa u bveledza tshishumiswa nyangaredzi tshi humbulelwaho tshine tsha shumisa hairoakhositiki data fhasi lwanzheni i katelaho na mapa ya sabusitireithi. Hu khou lavhelelwa uri mapa i do shumiswa u edza zwitshavha zwa dzingu zwa bayolodzhikhala na u bveledza mapa ya vhudzulo ya benthic u itela u shumiswa kha saintsi ya madini na ndangulo. Musi algorithimu i tshi huliswa, thalutshedzo ya tshifinga vhukuma ya vhudzulo i do kona u vhonala.

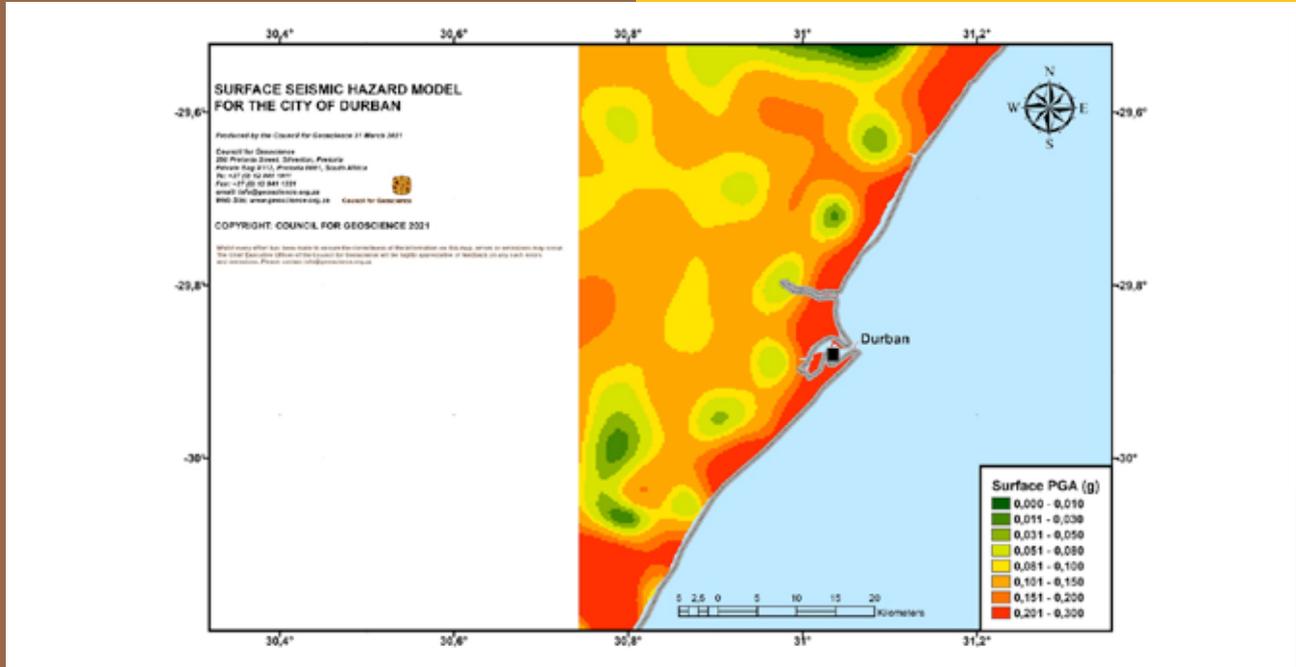


Tshifanyiso tsha vhumisumbe. Mapa wa dzhiolodzhikhala wa Mossel Bay



Hu na dzangalelo lo engedzeaho kha u topola zwiko zwiswa zwa minerala na u bveledza vhurangaphanda ha vhupo kha lkonomi ya Lutombo ya Afrika Tshipembe zwi da na u vhona u ri nga ndila dzo vhalaho vhupo ha madanzhe ho imela 'miledzoni ya u fhedzisela'

SAINTSI YA VHUPO U ITELA THEMAMVELEDZISO NA TSHUMISO YA MAVU



Mapa ya khombo ya seisimiki ya Durban i tevelaho phindulo ya fhasi ya musaukanyo wa n'waha wa mi'nwaha ya 475 ya tshikhala tsha u fhindula PGA 0.0s.

Thero ya themamveledziso ya Saints'i ya vhu'po na Tshumiso ya mavu i n'ekedza nzudzanyo ya sisitemethiki ya tsenguluso ya saints'i ya vhu'po. Mafhungo a saints'i ya vhu'po a senguluswa u itela u topola na vhu'po ha vhudzulo ha vhatu vhu sa nyethi, tshumiso ya mavu i sa nyethi na themamveledziso. Ndayotewa ya Afrika Tshipembe na Khethekanyo ya 5.1(eA) ya Mulayo wo Shandukiswaho sa Saints'i ya vhu'po zwi amba uri CGS i tea u 'sedzulusa na u ela mivhigo yothe ya dzhithekhinikha'la maelana na khombo dza vhu'po dzine dza nga kwama mveledziso dzothe dza themamveledziso sa zwe zwa randelwa kha mitengo iyi'.

Maelana na Bono la NDP la 2030, tshipikwa tsha thero ndi u tshimbidza themamveledziso i shumaho na mveledziso ya mavu. Milayo yo vhalaho na mazhendedzi a mveledziso, a nga ho sa Zhendedzi la Thikhedzo ya Themamveledziso ya Masipala, Mulayo wa Ndangulo ya Zwiwo, Vhupulani ha

Tshikhala na Mulayo wa Ndangulo ya Tshumiso ya Mavu na Themamveledziso ya Ndeme.

Mulayotibe, u dovha wa sika vhu'po vhu konisaho u itela uri thero i kone u tikedza vhu'difhinduleli ha lushaka. Thero iyi a i n'ekedzi fhedzi mafhungo a saints'i ya vhu'po na u dzhenelela u itela mveledziso ya themamveledziso, fhedzi i tikedza mveledziso ya ikonomi Afrika Tshipembe, mveledziso ya minerala, u gonyisa pe'tiroliamu (zwi re ole na gese) na zwiko zwa ma'qi. Khombo dza mupo dza shango dzi katela khombo khulwane ya u fhungudzea ha mavu a dolomaithi, midzinginyo na midalo, zwothe zwine zwa nga vha na masiandaitwa a ndeme kha ikonomi, ndaka na mveledziso u na ndeme ya themamveledziso. Vha CGS vha kwha'hisedza vhu'koni ha shango ha u langa masiandaitwa a khombo dza mupo nga u kuvhanganya mafhungo a saints'i dza vhu'po na u fha'fa khaidzo u t'avhanya ine ya nga fhungudza masiandaitwa a khombo.

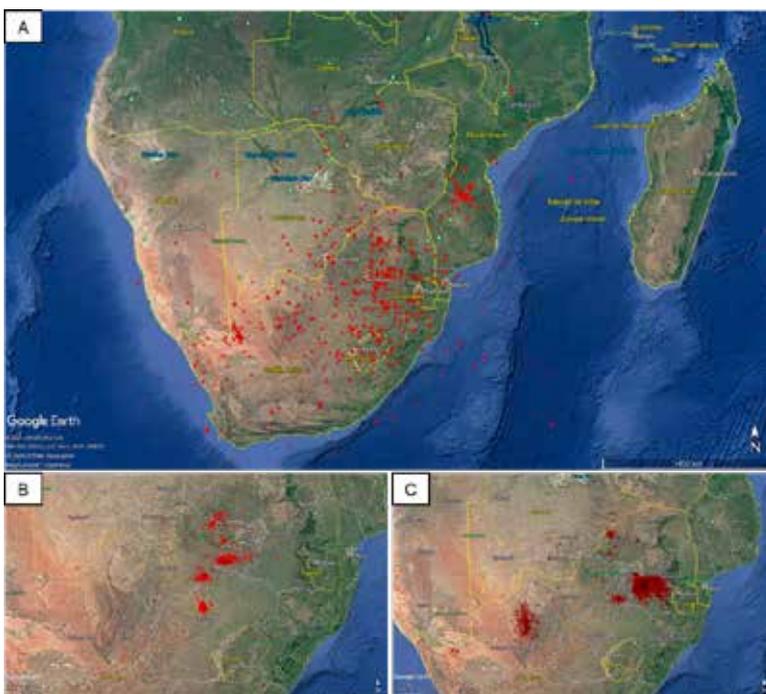
4.5 TOLA HA SEISIMIKI NA NDONDOLO

Vhubvo na ndivho: Ndivho ya u tola ha seisimiki na ndondolo ndi u nekeda data ya midzinginyo ya pharamethiriki ya dzingu, ya dzhangho, yapo na ya vhupo ha migodi. Nthani ha izwo, nungo dzo itwa dza u engedza vhukateli ha South African National Seismograph Network (SANSN) na u fhungudza phimo ya ngafhadzo- u ya - kha phosho ya data ta thevhekano ya tshifhinga. Hezwi zwo tikedza thandela dza thodisiso na ndingo dza khombo ya vhupo dzine dza talula madzingu ane a vha khomboni ya seisimisithi na u leludza vhuswaledzi ha dzitshaka.

Tswikelelo na mavhala a nngwe: U tola ha seisimiki ho dowealeho ha SANSN u bva Phando u swika Nyendavhusiku 2020 ho bvedza bannga ya data ya zwiwo zwa seisimiki zwa 4 910 zwo rekhodiwaho nga zwiitshi zwiraru kana zwinzhi. Ho vha hu na midzinginyo ya thekitoniki ya 642 yo rekhodiwaho nga ngomu ha mikano ya Afrika Tshipembe na nnda kha phendelashango, hu na midzinginyo yo salaho ire kha mashango a maledzani a vhukule ha theseisimiki ine ya fhira 1 000km nga nnda ha mikano ya Afrika Tshipembe (Tshifanyiso tsha 18A). Ho vha hu na midzinginyo i elana na zwa migodi ya 838 u bva kha midavhi ya musuku na migodi ya pulatinamu Afrika Tshipembe (Tshifanyiso tsha 18B). Vhunzhi ha tsumbo dza seisimiki dzo thoma kha vhupo ha migodi ho bvelelaho kha Riphabuiki 2 937 ya zwo zwa sumbedziswa kha dathabeisi sa mithuthubo ine ya khou humbulelwa* (Tshifanyiso tsha 18C).

Tshipida tsha tshigwada tsha migodi tsha thandela tsho talulwa nga musaukanyo wa seisimiki wa Phando 2020 u swika Phando 2021 u vusuludzwaho netiweke ya tshigwada tsha migodi Afrika tshipembe na dathabeisi ya seisimiki. Zwiwe zwa zwiwo 6 295 zwo wanala nga u shumisa zwiitshi zwa netiweke dza zwigwada zwa zwiwo zwa 6 295, zwa 102 zwo vha zwi nga ngomu kha Thandela ya Ndangulo ya Maqi ya Tshirathedzhi kha vhupo ha (Johannesburg), zwa 5 000 kha vhupo ha kule ha West Rand (Carletonville) na 1 193 ngei Klerksdorp-Orkney-Stilfontein-Hartebeesfontein (Klerksdorp). Data u bva kha netiweke tharu dza zwigwada yo saukanywa duvha na duvha. Kule West Rand ndi hone he ha vha hu tshigwada tsho dalaho zwa seisimiki (tshi re na 79% ya zwiwo zwa netiweke zwa zwigwada zwothe zwo saukanywaho)

Thodisiso ya u topola zwiwo zwo sianaho zwa seisimiki na zwiitshi zwa SANSN ngei Parys na Hartebeeshoek zwi re kule kha migodi ya musuku ya West Rand dzi shumisa musaukanyo wa zwi elanaho wa lushaka lwa gabelo u bvedza ngona ine ya nga khwinisa vhupo ha tshihindini. Zwiwe hafhu zwa thodisiso zwi khou itwa u itela u dzudzanya zwikalo zwa Richter u itela zwiwo zwa seisimiki zwa u shumiswa sa tshikalo tsha muelo wa West Rand, kule West Rand na Klerksdorp-Orkney- Stilfontein-Hartebeesfontein kha vhupo ha migodi ya musuku.



Tshifanyiso tsha vhufumimalo. Tsho wana mudzinginyo u bva SANSN.
 a) Zwiwo zwa Tectoniczwo wanala,
 b) zwiwo zwi elanaho na migodi zwo wanala,
 c) zwiwo zwo sumbedziswa sa mithuthubo ine ya nga vha hone.

4.6 MBEKANYAMUSHUMO YA NZUDZANYO YA KHOMBO DZA VHUPU

Vhubvo na ndivho: Mbekanyamushumo i khwinisa na u lugisa vhuphara ha tshikhala ha tshifhinganyana na khombo dza vhupo, zwi katela vhukhaki/nqila dza u tshinyala na u guda zwa mutsiko na u kondela, zwine zwa talula khombo dzo wanalaho na u wela kha mavu a dolomaithi na u dzudzanya midzinginyo na nqila dza u kundelwa; i dovha ya toqdisisa thuthuwedzo ya zwivhumbi zwa nqila (sa nyito ya muthu na zwiveleli zwa methero lodzhikha) na zwiwo zwa dzhi lodzhi na khombo dza vhupo, i ita zwiedza zwa khombo dza vhupo na ndingo dza khohakhombo, na u ita tshenzhelo, nyito dza u fhaṭa vhukoni u sumbedzisa ndeme ya ndingo dza khombo ya vhupo.

Tswikelelo na mavhala a nngwe: Musi wa 2020/21, mbekanyamushumo iyi yo nekedza luvhonela lwa ndeme kha khombo dza seisimisithi, u thuthubisa, nyimele ya fhasi, dolomaithi na midzinginyo. Ho itwa nga vhulondo vhukuma u nekedza mafhungo nga tshivhumbeo tshine mimasipala na mivhuso yapo zwa nga tanganyisa nga ngomu kha zwipiḑa zwa u ita mbekanyamaitele sa maga a u fhungudza tshinyalelo.

Mavhala a nngwe mahulwane a mbekanyamushumo:

- Mapa ya seisamiki ya kha nyalo yo wanalaho u bva kha vhupo ha Durban i sumbedzisa uri dorobo i khomboni ya ya u nga tshinyalelwa nga mavu arali a vha na mudzinginyo muhulu (Tshifanyiso tsha vhufumiṭahe na tsha vhufumbili). Zwenezwo ndi zwa ndeme, uri hu dzhiwe maga o teaho kha nyolo ya themamveledziso i nga ho sa zwifhaṭo, madamu, zwititshi zwa muḑagasi, dzibada na laini dza phaiphi u itela u fhungudza mveledza dzine dza nga vhangwa nga mudzinginyo.
- Musi hu na mveledziso ya ikonomi i bveleaho phanḑa, mupfuluwo ya tshitshavha na nyaluwo ya dorobo u ya kha phendelashango ya vhubvaḑuvha, khombo ya Afrika Tshipembe ya seisimiki i khou

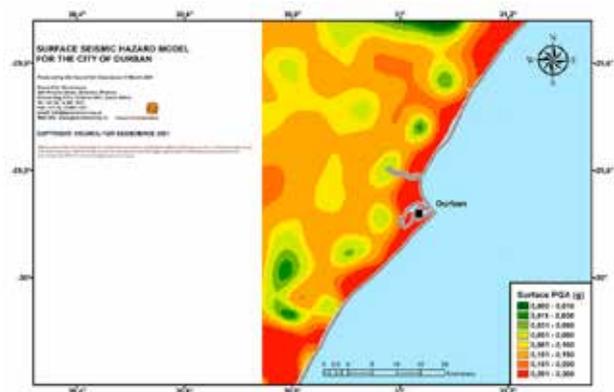
khou engedzea. Ndingo dza khohakhombo ine ya nga vha hone kha dorobo idzi na u sengulusa ndozwo ine ya nga vha hone arali ha vha na mudzinginyo u tshinyadzaho.

- U kundelwa ha nzengamo (midzinginyo) kha dzingu kanzhi i vhangwa thuthuwedzo ya nathropodzheniki dzi elanaho na mveledziso na/kana mvula khulu/ya tshifhinga tshilapfu ine ya engedza mutsiko wa maḑi a mabulini kha matheriala wa nzengamo. Zwenezwo, vha CGS

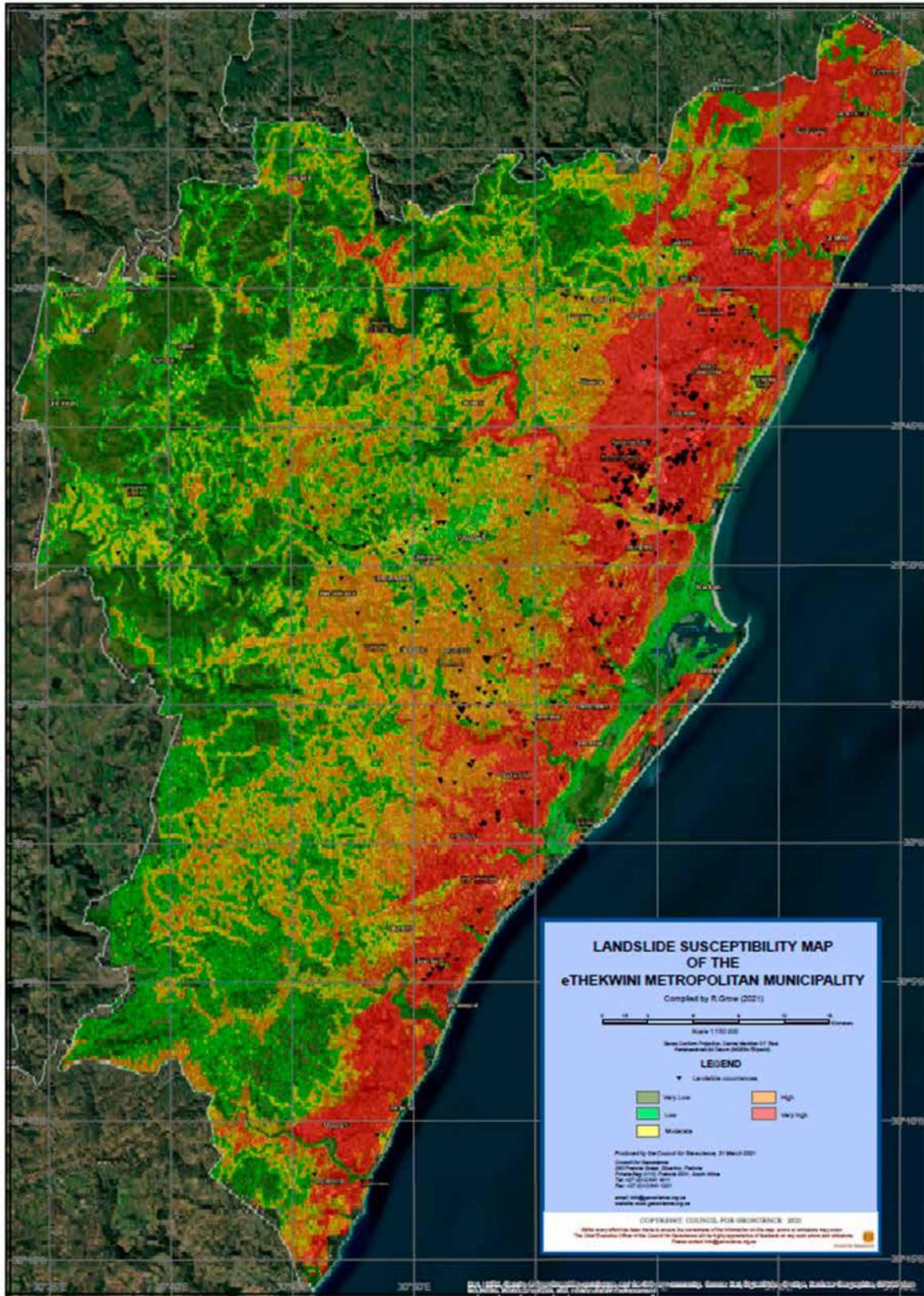
vho bveledza mapa wa u vha khomboni ya tshikalo tsha mudzinginyo wa masipala kha eThekweni na vhupo ha tsini (Tshifanyiso tsha fumbilithi). Mapa u ḑo vha tshipiḑa tsha ndeme tsha tshishumiswa tsha nzudzanyo ya vhupulani ha tshitshavha kha u fhungudza masiandaitwa a ḑaḑisaho a midzinginyo kha dzingu. Zwi khou themendelwa uri mafhungo a shumiswe lwa tshifhinganyana u itela vhupulani ha tshumiso ya shango na tsireledzo ya tshitshavha u fhungudza khohakhombo na khombo ya fhethu hu re khomboni.

Vhulanguli vhu eletshedzwa u bveledza nyendedzi dza mbekanyamaitele u fhungudza mutevhe uyu wa nyanyuwo. Mvelelo ya mutsukunyeo wa fhasi u elanaho ha nyito ya u thuthubisa kha vhupo ha mugodi wo vuleaho i ḑo thusa kha u bveledza mbekanyamaitele na ndaulo kha tshikhala tsha vhukati ha fhethu ha zwa migodi na vhupo hu engedzea ho teaho u khaṭhisedza tsireledzo ya tshitshavha. hezwi zwi ḑo khaṭhisedza mveledziso ya tshumiso ya mavu.

// Musi wa nḑwaha wa muvhalelano wa 2020/21, Mbekanyamushumo ya Nzudzanyo ya Khombo dza Vhupo dza Lushaka yo nekedza luvholela lwa ndeme kha khombo ya seisimisithi, u thuthubisa, nyimele dza fhasi na dolomaithi na midzinginyo.



Tshifanyiso tsha vhufumiṭahe. Mapa wa nyalo ya seisimiki wa dorobo ya Durban nga murahu ha musaukanyo wa phindulo ya fhasi kha tshifhinga tsha miḑwaha ya 475 tshifhinga tsha phindulo tsha PGA 0.0s.



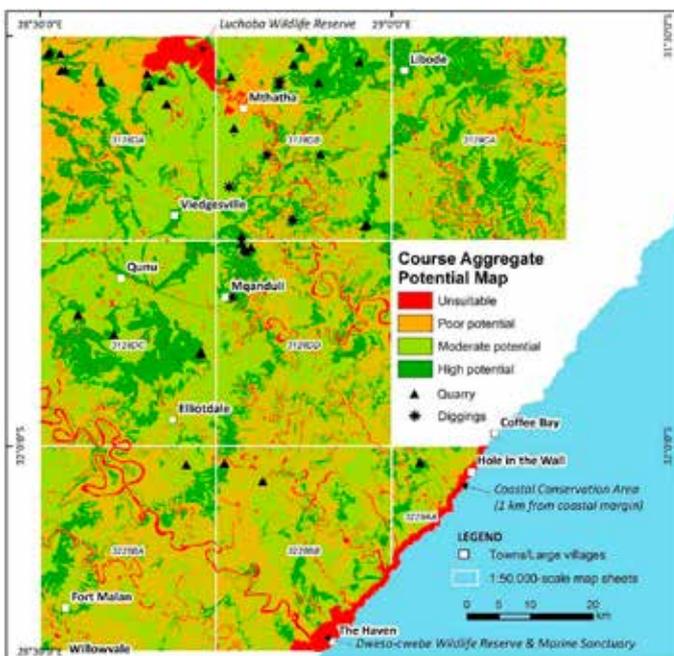
Tshifanyiso tsha vhufumbili. Mapa wa khombo ya mudzinginyo wa Masipala wa eThekweni Metropolitan Municipality, Vundu ja KwaZulu-Natal.

4.7 NZUDZANYO YA EASTERN CAPE

Vhubvo na ndivho: Thandela ya Nzudzanyo ya Eastern Cape i katela tshodisiso dzo angalalaho dzine dza kuvhanganya, u saukanya na u bvedza data ya saintsi ya vhupo ya ndeme kha mveledziso ya ndeme na madungo a vhushai kha vundu. U itela u livhana na khaedu idzi, ngudo dzo livhaho vhupo thwii dzo itwa u itela u thusa vhashumisani u dzhia tseo yo dziaho nga ha vhupulani na tshumiso ya shango, mveledziso ta themamveledziso, ndondolo, ndangulo ya vhupo na/kana tshinyadzo i londotwaho ya zwiko zwa ndeme zwa mupo na zwiko zwa ikonomi. Zwipikwa zwa ndeme ndi u tšalula ndango dza mupo na dza dzhiolodzhikhala kha mukumbululo wa tshihadu u songo dowelea na u nekedza mafhungo a ndeme a sitirathifiki na a tshivhumbeo u itela u thusa u wana zwiko zwine zwa nga vha zwi songo vhonala zwa maqithavhela. Khuvhanganyo ya mafhungo a saintsi ya vhupo a ndeme ya ntha nga kha mveledziso ya mapa wa dzhiolodzhikhala wa tshikalo tsha 21 1:50 000-na khuvhanganyo yo tangananaho u swika zwino ndi u fha sambula dza mavu na matombo dza 300, zwo bvedzwa data ya ndeme u itela ngudo dza saintsi dza u tshinyala ya mavu, khonadzeo ya maqithavhela na zwiko zwa ikonomi zwa Vundu la Eastern Cape.

Tswikelelo na mavhala a nngwe: U penya hu nyanyulaho nga u vhona na sambula dza dzhiokhemikhala na dza dzhiothekhinikhala

dza masalela a Latee Quaternary (Masotcheni Formation) a elanaho na mbonalo dza mukumbululo zwo itwa u itela u pfesesa khwine vhukale ha zwiwo zwa mukumbululo na mbonalo dza fisiokhemikhala dzine dza konisa u tshinyala. Tshodisiso dzi sa gumi dzi do disa khumbuleli ya khombo ya mbono ya shango ya matshelo u itela khonadzeo ya zwa vhulimi na mveledziso ya themamveledziso kha dzingu, na u bvedza mapa ya ndingo ya khohakhombo ya mukumbululo na dathabeisi ya mutevhe wa mukumbululo yo engedzwaho. Data ya nzudzanyo ya dzhiolodzhikhala yo tangananaho na zwivhumbi zwa dzhiolodzhikhala zwo konisa u sikwa ha mapa wa muanganyelo ya u hwasane wa vhekanya vhupo ho teaho khwari ine ya nga vha hone tshifhingani tshi daho kha vhupo ha u mona na Mthatha (Tshifanyiso tsha vhufumbithihi). Ndingo na tzedzuliso ya mupfumu wa kaolini na basalathi sa minerala i konadzeaho ya ikonomi kha Vundu la Eastern Cape na kha lushaka. Mvelaphanda yo itwa musu wa nwaha u elwaho kha u elwa ha kaolini u mona na mavundu mana, hu tshi katelwa Vundu la Eastern Cape, sa matheriala wa u fhatana kana wa pfarelavhudzulo kha u bvedza semende, hu na musaukanyo wa dzhiolodzhikhala wa sambula dza kaolini dzi fhiraho 150 dzo kuvhanganywaho nga 2019/20 zwo fhedzwa, na tshalutshedzo na zwiedziswa dza data zwino zwi ndilani. Ngudo dza khonadzeo ya tshumiso ya ndowetshumo ya mupfumu wa nasalathi wo bviswaho kha doleratsi une wa elana na Vundu la Karoo Large Igneous zwi kha luga la tshodisiso dza khomphiyutha.



Zwipikwa zwa ndeme kha Thandela ya zudzanyo ya Eastern Cape ndi u tšalula ndango dza mupo na dza dzhiolodzhikhala kha u sa dowelea ha mukumbululo wa tshihadu na u nekedza mafhungo a ndeme a sitirathifiki na a tshivhumbeo u itela u thusa kha u wana maqithavhela ane nga vha a songo topolwa.

Tshifanyiso tsha vhufumbithihi. Tshiedziswa tsha tshiputeli tsho elwaho tshi sumbedzaho khonadzeo ya u anganyela ha u hwasane kha vhupo ha Mthatha na u mona naho

SAINTSI YA VHUPO YA THERO YA MUTAKALO, MADITHAVHELA NA VHUPO



U thoma ha maḍithavhela musu wa u bwiwa ha gwedzho la PD-BH01, dzingu la Phuthaditjhaba

Migodi ndi sekithara yo vhibvaho vhukuma ye ya takula ikonomi fhedzi yo swikelela he ya vha na khaedu dza vhufa dza vhupo dzi ṭoḍaho ṭhogomelo ya tshihadu. Mutakalo wa matshiliso na ikonomi wa zwitshavha u elana tshoṭhe na mutakalo wa vhupo vhune vha tshila khaho, vha bveledza zwiliwa na u shuma. Zwo sedzwaho nga migodi u mona na lifhasi ndi u pfulutshela kha u sedzulusa na u tshinyadza, hu na kwhaṭhisedzo khulwane kha vhurangaphanda ha vhupo. Sa shango li re na ṭhahalelo ya maḍi, Afrika Tshipembe li livhana na khaedu khulwane dza u wanala na u ṅekedza maḍi, zwa ṅaniswa nga kupfesesele kuṭuku kwa zwiko zwa maḍi. Mveledziso

ya zwiko zwa zwitshavha, vhulimi na minerala na fulufulu zwo ḍisendeka nga u vha hone na ndivho nga ha zwiko zwa maḍi.

Mutakalo wa Saintsi ya vhupo, maḍithavhela na Thero ya vhupo zwi bveledza vhurangaphanda ha vhupo, nga maanda kha vhupo hune ha nga tshikafhadzwa nga kha nyito dzi ngaho sa u sedzuluswa ha minerala. Nga fhasi ha thero iyi, zwiko zwa maḍi ṭhahvhele zwo topolwa na u khetiwa u itela zwitshavha, feme na zwa vhulimi. U dzhenelela hu ngaho sa u vusuludza hu si ha tsiko nahone hu ḍo dzhielwa ṅṅha.

4.8 NDANGULO YA VHUÐIFHINDULELI JA MUVHUSO HA MIGODI I SA LONDIWI NA I SI NA VHAÑE AFRIKA TSHIPEMBE OWNERLESS MINES IN SOUTH AFRICA

Vhubvo na ndivho: Ndangulo ya Vhuðifhindleli ho Ðisendekaho nga Muvhuso maelana na Thandela ya migodi ya D&O Afrika Tshipembe (ine zwino ya vhidzwa Ðhoðisiso ya Saints dza Vhupo kha Migodi ya Ifa) i shumisa kuitele kwo dodombedzwaho kwa ðhoðisiso ya saints ya mupo ya masia othe kha migodi ya vhufa u itela u topola khohakhombo khulwane na u themendela u kona u shumisea ha ndangulo ya khohakhombo na mbekanyamushumo dza mvusuludzo. Ndivho khulwane ndi u fhungudza masiandaitwa a migodi i sa londiwi na i si na vhañe nga u topola, u vhekanya, u vala na u vusuludza migodi iyo. Thandela i do sika u tola ho ðanganelanaho ha migodi ya khombo yo litshedzelwaho, u shuma zwa ndingo zwa vhudziki ha fhasi ho vhalaho na u tshinyala kha migodi ya khombo yo litshedzelwaho ita ndingo dza ikononi ya saithi dza vhufa dza migodi na u bveledza pulane ya tshumiso u itela tshithathedzhi tsha u valwa ha migodi tsha lushaka.

Tswikelelo na mavhala a nngwe: U valwa ha migodi miña i songo tsireledzea zwo ðisa ðiga ða u valwa ða vhukuma ða thandela magumoni. Thandela yo sedza kha ðhoðisiso nga u shumisa data ire hone u itela u ola hafhu zwo sedzwaho nga mushumo kha ñwaha ya muvhalelano muswa.

Khemisitiri ya maði (a nnda na maðithavhela) ya fhethu ha ngudo i na pH ya fhasi, vhuþumani ha ntha, zwiomate zwizhi zwo ñokaho na pfutelelo ya ntha ya aseniki, alumiamu, ayoni, zinki, seleniamu, saþifeithi na manganisi zwo fhiraho nyendedzi dza SANS (2015) u itela u shumiswa miðini.

Musaukanyo wa mavu wa dzhiokhemikha ða u shumisa phaðaladzo nga ngomu na nnda ha migodi ya vhufa yo sumbedza u ðala ha mavu u fhira tshikalo tsha ndinganelo. Ngudo dza vhudziki ha mavu fhethu ha u gudela (besini dza Witwatersrand na eMalaheni) dzo wana uri vhupo hu sa dzhielwi ntha ho vha hu songo tea (hu khomboni ya u wela). Nthani ha u nyamisa, migodi ya u wela, u wela ha mavu na mitwe ya shango (zwi nga ho sa miteo ya fhasi) zwi nga vha hone nga kha u bviswa huhulu ha maðithavhela na/kana maitele a u valwa kha matombo a dolomaithi.

Thekiniki ya u vhona u kule na dzhiofisikisi ya muyani zwo shumiswa u dzudzanya u tshinyala ha nga ntha/ u wela na masiandaitwa a vhupo kha migodi ya vhufa/ shumaho. Musaukanyo wa tzedzuluso dza 17 wo sumbedza u tshinyala ha nga ntha fhethu ho no bwiwaho. Data ya u vhona u kule yo sumbedza mavu a sa tsha shuma a elanaho na u bwa malasha.

Nyolo thangeli ya muþalukanyo yo bveledzwa u itela migodi ya malasha ine khou salela murahu nga miloto i dubaho ya malasha. Nyolo i dzhiela ntha tshumiso semende ya u ðadza nga murahu, sa zwine zwa funisa u vha thekhinoðodzhi ya u ðadza nga murahu nga ñwambo wa mbonalo dza vhuinzhiniara dza matheriala. Ndeme ya muya kha zwipali zwa muya (PM10 na PM2.5) i tshimbila kha fhethu ha ndeme hothe zwo sumbedzwa phambano ya khalañwaha, hu na milimo minzhi (khombo dzi si na mutakalo) uri zwi vhonelese musi wa vhuria. Data ya gwedzho u bva Protea Colliery yo sumbedza u ita minerala ya tshileithi ya khaboni kha vhungolo ha fhasi ha 100m, zwine zwa ñekedza tshikhala tsha ndingo dza u bwa hafhu nga ntha.

4.9 MBEKANYAMUSHUMO YAVHUPO HA MUGODI NA NDANGULO YA MAÐI

Vhubvo na ndivho: Mbekanyamushumo ya Vhupo ha Mugodi na Ndangulo ya Maði i bveledza zwiþirathedzhi zwa u fhungudza u itela ndangulo i sa nyethi ya maði a migodi Afrika Tshipembe. Musi wa 2020/21, ho itwa thandela dza sumbe dza thekhinikhala dzine dza vha na vhurangeli (u thivhela) na u fhindula (u lulamisa) u itela u livhana na khaedu dza vhupo. Thandela iyi yo sedza u topola ndila dzine ngadzo maði a dzhena kha migodi ya fhasi ya vhukovhela, vhukati na vhubvaðuvha ha besini ya Witwatersrand na u dzinginya maga a vhuinzhiniara a u fhungudza u dzhena ha maði

Tswikelelo na mavhala a nngwe: U fhatiwa ha mugero wa Van Ryn ho fhedzwa, hu na ðhanziela ya vhukuma ya u fhedza ye ya sainiwa nga ða 30 Khubvumedzi 2020 (Tshifanyiso tsha vhuþumbilimbili). Mugero u ði thivhela ðithara dzi swikaho 60/muthethe dza maði kha u dzhena mabuli a migodi he ha vhlungwa u swika R25 miþioni nga ñwaha kha bombo na sisiteme ya u dzi ðhogomela. Khamphani ya u fhatiwa yo tholwa u vala mutwe wa nyengedzedzo wa Modderbee. Saizwi tshumiso yo vha i sa khou konadzea nga ñwambo wa fhethu hu re na miðalo, ngona ntswa yo do dzinginywa hu na tshumiso ya izwo yo dzudzanyelwaho u bva kha kotara ya u thoma ya 2021/22.



Tshifanyiso tsha vhu fumbilimbili. Mvusuludzo yo fhelaho ya mugero wa Van Ryn, hu na maḁi o pambuswaho hafhu

U lugiswa ho fhumulaho ha munwelelo wa mugodi ya esidi

U lugiswa ho fhumulaho ha munwelelo wa mugodi ya esidi ho engedzedzwaho ho itea kha saithi ya mugodi wa vhufa, saithi ya u bvisa ya Witkranz (ngei Carolina, Ermelo coalfield) ngei kha Vundu la Mpumalanga. Sisiteme yo shumiswaho ya u fhungudza na u bveledza alkalini (RAPS), dzine dza pfi sisiteme ya

CaroRap, zwo thoma u shuma nga la 17 Phando 2021. Mvelelo dza u thoma dza zwishumiswa zwa nnda dzo sumbedza sisiteme i mangadzaho ine ya tshuwedzwa nga mutsho. Kha vhege thanu, sisiteme yo gonyisa pH u ya kha mbalotshikati ya 5.6 u bva kha mbalo tshikati ya 2.9, zwo tangana na u engedzea ha alkalini kha tshikalo tsha 35.8mg/L. Zwo fhungudza Fe nga 92% na aluminium nga 58.8% - tswikelelo i mangadzaho.

VHUBVELEDZI HA SAINTSI YA VHUPO



Nyolo ya tshiedziswa tsha tshumisano tsho sedzaho tshumisano ya vathu na vhuṭali vhu si ha tsiko (AI) vha khou shumisana u khwaṭhisedza u kushumele kwa ngelekanyo ya muthu

U vhlunga ha CGS kha vhubveledzi hu tshimbidza na u konisa u dzhenelela hu hulwane kha saintsi, zwine zwa swikisa kha luvhonela lu re khagala lwo dzhenelelaho na tsho dza khwine dza u tikedza bono la vha CGS. Thero ya Vhubveledzi ya Saintsi ya vhuo i tshimbidza u bveledzwa na tshanduko ya mihumbulo ya vha thasululo ya u tandulula khaedu dza shango na dza tshitshavha dzi dinaho, dzi ngaho sa u shaea ha maḍi, vhushai na khombo dza vhuo. u mona na sethe dzo fhambanaho dza data kha sia la saintsi dza vhuo (dzhioḽodzhi, dzhiofisikisi,

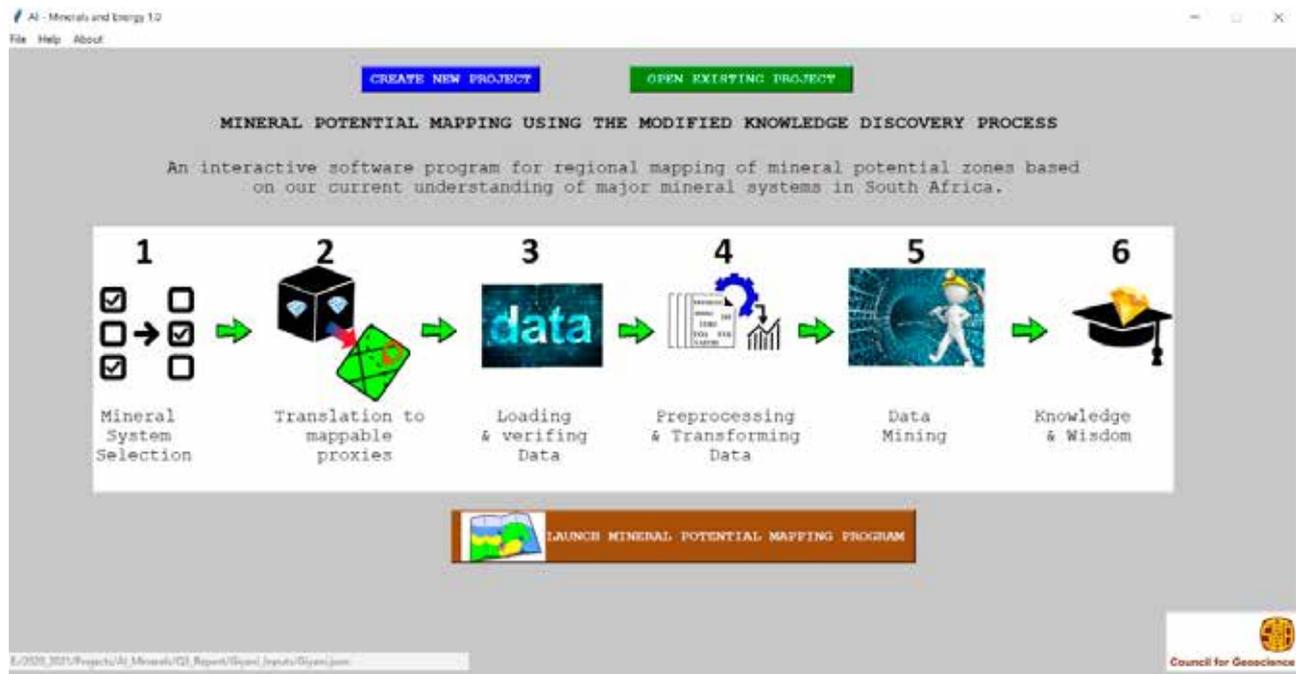
dzhiokhemisiṭiri nz) data dzi khou kuvhanganywa na u dzudzanywa nga luvhilo lu mangadzaho, zwi bveledzaho hoḽea ya tshihaḽu ya thyeori ntswa dza u bveledza na dza u shumisa khomphiyutha na zwishumiswa u tendela vathu u bvisa data ya ndele (nqivho). Thero ya Vhubveledzi ha Saintsi ya vhuo i dovha ha sengulusa tshumiso ya thekhinoḽodzhi ya musalauno i nga ho sa u bvisa ha nqivho ya AI. Hezwi zwi ḽo khwinisa luvhilo, kushumele na vhuronwane kha maitele a u bvisa nqivho.

4.10 THANDELA HA YA NZUDZANYO YA KHONADZEO YA U HUMBULELA MINELA NA FULUFULU YA AI

Vhubvo na zwipikwa: Thandela iyi i lingedza u sika sofuthiwee ine ya shumisa miṭalukanyo ya AI kha data ya saintsi ha vhupo u livhana na khaedu dzo konḁaho dza khonadzeo ya nzudzanyo ya minerala. AI i ḁo dovha ya fhungudza thengo ya u bvedzwa mapa/zwiedziswa zwa ho sedzwaho kha tsedzuluso, zwine zwa kunga vhubindudzi na vhupulani ha tshumiso ya shango. Tshanduko ya tsedzuluso ya maṅwalwa ho dodombedzwaho yo itwa kha sisiṭeme dza minerala kha zwikalo zwi sedzwaho kha tshivhalo tsha sisiṭeme dzoṭhe dzi ḁivheaho dza minerala ya dzingu (VMS) (malaṭwa na musuku wa orodzeniski) Afrika Tshipembe. Tshiputelo tsha sofuthiwee (AI_MIN1.0) tshi na sisiṭeme dzoṭhe dza minerala na aḁigorithimu dza AI dza data ya saintsi ya vhupo dzi

shumisaho nḁivho yo khwinisaho ya maga a rathi sa maitele a u tumbula (Tshifanyiso tsha fumbiliraru).

Tswikelelo na mavhala a nngwe: Kha ṅwaha une wa khou sedzuluswa, ho sedzwa masia a dzhiolodzhikhala, dzhiofisikhala na a dzhiokhemikhaḁa o vhalaho a lingiwa ane a vha a ndeme kha tshumiso ya tshishumiswa tsha u humbulela khonadzeo ya minerala. Sethe ya sisiṭeme dza u ita minerala yo sikwa, hu tshi katelwa malaṭwa a musuku na SEDEX. Tshishumiswa tsho lingwa kha GGB, hu na mapa wa minerala une wa bvedzwa u itela zwipiḁa zwa bannda. Mukano une wa shumisea wa vhupo (Tshifanyiso tsha fumbiliraru) wo bvedzwa u itela u shumisa sofuthiwee nahone, tshifhingani tshi ḁaho tshishumiswa itshi tshi ḁo engedza u swika kha nzudzanyo ya aḁuviala, musuku wa ayoni, musina, musuki wa ayoni okisaidi na zwitaḁululi zwa malaṭwa a VMS.



Tshifanyiso tsha fumbiliraru. Maitele a vhubvhubu a nḁivho o khwiniswaho a shumiswaho kha sofuthiwee ya AI_MIN



Thero ya Vhuswaledzi ha Saintsi ya Vhupo i tikedza zwipikwa zwo ṅandavhuwaho zwa mveledziso ya dzitshaka ya saintsi ya vhupo na ṅhoḁea, nga maanda dza zwitshavha zwa Afrika.

VHUSWALEDZI HA SAINTSI DZA VHUPO



Thimu ya vha CGS i khou shuma nḡa Sperrgebiet, Namibia. Nga murahu ndi inselberg tḡukhu ya Mesoproterozoic Tschaukhaib granite gneiss

Tsiko na tshanduko ya nyalo ya pulanethe i engedza ya fhira mikano ya muvhuso kana tshiimiswa tshithihi. Sa muḡwaleli wa tshoṡhe wa OAGS, vha CGS vha shumisesa Thero ya Vhuswaledzi ha Saithi dza vhupo u khunyeledza na u shuma vhushaka ho vhalaho ha vhushaka ha dzitshaka ho vhalaho ha Afrika Tshipembe, nga maanḡa kha zwa saintsi dza vhupo. zwi tshi elana na ndeme khulwane dza ndaulo ya vhurathi ya 'A better Africa', vha CGS vha na ḡivhazwakale ha tshumisano na mashango o vhalaho a Afrika nga kha nzudzanyo ya saintsi ya vhupo, mvusuludzo ya tshiimiswa, u dzudzanya mapa na dziḡwe tshumelo. Zwa zwino, vha CGS vho shuma na Mihasho ya Minerala na Migodi ngei Malawi na Namibia.

Thero ya Vhuswaledzi ha Saithi ya vhupo na vhupo vhu konisaho u itela vhuḡifhinduleli ha lushaka. Zwiḡḡwa zwa ndeme zwa u fhaṡa vhukoni ha vhatu u mona na zwikili zwa saintsi ya vhupo, ndaulo na zwa ndangulo na vhurangaphanḡa na mveledziso ya zwibveledzwa zwa vhubveledzi, sisiṡeme na tshumelo. Thendelano kha vhupo ha dzhango ḡa Afrika ha thengiso ya mahala i ḡekedza zwikhala zwa ndeme zwa u vhea Afrika kha nḡila ya thengiso ine ya rangiwa phanḡa nga

u vhulunga na maḡwe mashango a Afrika u itela u bveledza vhukoni havho ha nḡowetshumo.

Thero i tikedza zwipikwa zwo ṡanḡavhuwaho zwa mveledziso ya saintsi ya vhupo ya dzitshaka na tḡoḡea, nga maanḡa zwitshavha zwa Afrika. Nzudzanyo yo dodombedzwaho ya dzhioḡodzhikhala ya ndeme yo itwa ngei Namibia na Malawi u tikedza mveledziso ya ikononi na u gudisa na u bveledza vhoradzhoḡodzhi vhupo na matshudeni. Vha CGS vho dovha vha thola mulavhelesi ngei kha thandela ya dzhioḡodzhikhala na ya dzhiokhemikhaḡa ya Cameroon na Burkina Faso. Nga kha OAGS, vha CGS vho bvela phanḡa na u rangaphanḡa tshumisano dza Afrika. Netiweke ya seisimiki ya Afrika Tshipembe ine ya langula nga vha CGS i dzhenelela lwa ndeme kha khomishini ya ndugiselo ya CTBTO, ine ya tshimbidza tshumisano ya dzhango na u ṡola ndingo dza zwiḡhavhane zwa nyukilḡa.

Thero ya Vhuswaledzi ha Saithi dza vhupo i tikedza zwipikwa zwo ṡanḡavhuwaho zwa mveledziso ya dzitshaka ya saintsi dza vhupo na tḡoḡea, nga maanḡa kha mashango a Afrika.

4.11 DZANGANO LA MULANGANO WA U FHELISA NDIINGO NYANGAREDZI DZA NYUKIJA (CTBTO)

Vhubvo na ndivho: Vha CGS ndi Infrasound Waveform National Data Centre ya Afrika Tshipembe nga fhasi ya Mulangano wa U fhelisa Ndingo Nyangaredzo dza Nyukija (CTBT), we wa sainiwa na tendelwa nga muvhuso wa Afrika Tshipembe nga 1999. Muhasho wa zwa Makwevho, Nḡowetshumo na muḡaḡisano, une wa vha na Muḡwaleli wa Khoro ya Afrika Tshipembe ya Tshinyadzo Guḡe ya Mveledziso ya Zwiḡhavhane, u shuma kha maandḡalanga a lushaka kha mafhungo oḡhe a elanaho na CTBT ngomu shangoni.

Tswikelelo na mavhala a nngwe: Musi wa ḡwana une wa khou sedzuluswa, a hu na zwiḡḡwa zwa ndeme zwi elanaho na u dzhiwa na kushumele kwa tshiḡḡtshi tsha u lavhelesa zwe zwa rekhodiwa. Zwiḡḡtshi zwo dzula zwi tshi kona u shuma (Tshifanyiso tsha fumbiliḡa – nḡha) naho hu na thaidzo dza pfukiselo ya sathelḡaithi dzi thithisaho u pfukiswa ha data ya tshiḡḡtshi tshihulwane 39 (PS39). Mashudumavhuya, a hu na data yo xelaho nga ḡwambo wa zwishumiswa zwa u vhulunga kha saithi ya Boshof. Tshiḡḡtshi tsha inifurasaundu 47 (IS47) tsho isa phanḡa ha u ḡekedza

kushumele kwavhuḡi u bva nga Nyendavhusiku 2019 nahone tshi dzula tshi tshi kona u shuma (Tshifanyiso tsha fumbiliḡa - bottom). Naho dwadzetshifu ḡa COVID-19 ḡo lengisa mushumo une wa tea u itwa tshiḡḡtshini, mushumo u tea u takutshedza hu si kale. U lugisa voḡothi tshiḡḡtshini ho pulanelwa nga murahu ha 2021.

Vhaofisiri vhane vha swika malo vha CGS vho vhuella nga u dzhenelela webinar na khoso dza vhugudisi dzo vhalaho kha kotara ya vhu 4. Vhugudisi ho ḡekedza musaukanyo wa inifurasaundu, na zwiḡwe. Hezwi zwo dzhenelela kha u khwiniswa ha zwikili na musaukanyo wa data, ndondolo ya zwishumiswa na mushumo wa nḡḡa. zwithu izwi zwo shumiswa zwavhuḡi nga ngomu ha SANSN na netiweke ḡhukhu dza vharengi. Vha CGS vho bvella phanḡa na u eletshedza vha Muhasho wa Makwevho, Nḡowetshumo na Muḡaḡisano na Muhasho wa Vhushaka ha Dzitshaka na Tshumisano nga kha miḡangano ya ḡwaha nga ḡwaha na mabambiri a masia a ngaho sa nyito dza nḡḡa dzo ḡanganelanaho zwe kale zwa vha zwi tshi itwa nga CTBTO, u ḡunḡiwa ha zwishumiswa zwi CTBTO, u thomiwa ha senthara dza data ya lushaka shangoni na mishumo ya sivili na ya saintsi ya data ya CTBTO Afrika Tshipembe.



Tshifanyiso tsha vhufumbiliḡa. Kushumele na pfukiselo ya data ya Phando 2021 u swika 2 ḡhafamuhwe 2021 ya PS39 (nḡha) na IS47 (fhasi)

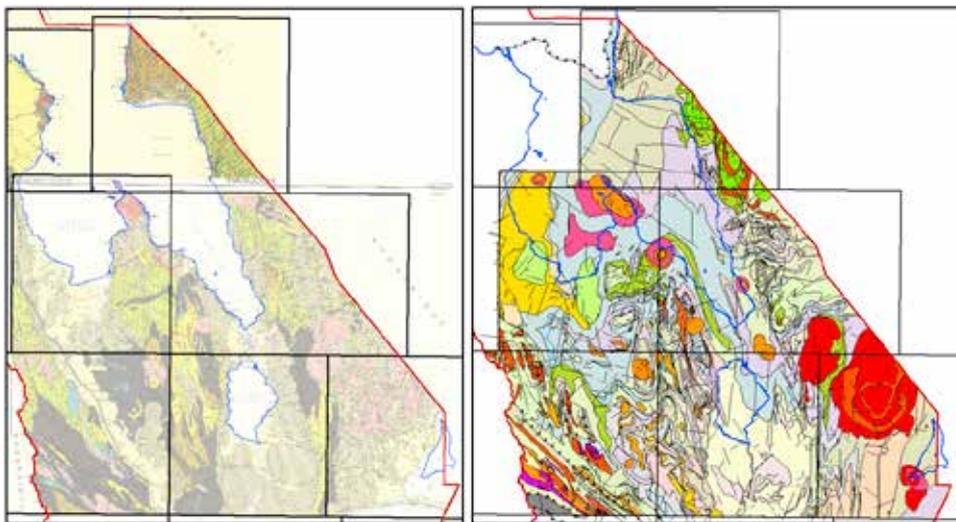
4.12 THANDELA YA NZUDZANYO DZA DZHIOŁODZHIXHALA NA NNDINGO DZA MINERALA YA

Vhubvo na ndivho: Thandela ya miŋwaha miŋanu yo lambedzwaho nga ĩa Fura ya Ndingo dza Minerala ana Nzudzanyo dza Dzhiołodzikhala (GEMMAP) (2016 u swika 2021) i shumiswa kha Muhasho wa Ťhođisiso dza Dzhiołodzikhala ya Malawi (Muhasho wa Migodi) khontsothiamu ine ya rangiwa phanđa nga Buroho ya de Recherches Géologiques et Minières ya France nga Tsedzuluso dza Dzhiołodzikhala dza Finland na vha CGS. Thandela i khou thoma tzedzuluso ya minerala yo vusuludzwaho ngei Malawi nga u bveledza mimapa ya dzhiołodzikhala ya tshizwinozwino na zwiŋwe kha shango lothe kha tshikalo tsha 1:100 000, 1:250 000 na 1:1 000 000, muŋwe na muŋwe u na ťhalutshedzo ya bammbiri, memo na muvhigo wa u fhedzisela. Nťhani ha izwo nzudzanyo dza dzhiołodzikhala, thandela i na miŋwe modulu miŋanu (dzhiołodzikhala ya masalela a lutsinga, ndingo dza khonadzeo ya minerala, themamveledziso na mbetshelwa ya zwishumiswa, vhubwa migodi huťuku na khombo dza zwa vhupo) zwo khunyeledzwa maffheloni a -2020/21. Thandela yo dovha ya katela mbekanyamushumo ya vhugudisi nyangaredzi ya vhashumi vha Muhasho wa Ťhođisiso dza Dzhiołodzhi.

Tswikelelo na mavhala a nngwe: Modulu wa nzudzanyo dza dzhiołodzhi ndi tshipiđa tshihulwanesa nga kule tsha GEMMAP na mushumo une vha CGS

vho no u ita wo dzhenelela zwiŋwane, Nťhani ha izwo, vha CGS vha na vhuđifhinduleli ha ndango ya vhudzuzanyi ha luambo dza thekhinikhala na mivhigo ya mvelaphanđa, vha vhone murađo u wothe wa Tshiisimane sa luambo lwa đamuni wa khontsothiamu. Mashudumavhi, COVID-19 yo vha na masiandaitwa a vhavhaho nga ŋwaha wa 2020/21, kathihi na tshanduko muvhisoni ngei Malawi nga murahu ha u vhuya ha khethogute dza 2019. Hezwi, na zwiŋwe zwiŋwabeo, zwo swikisa kha nyengedzedzo ya ŋwaha muthihi ya thandela na datumu ya u fhedza ya tshiofisi ya engedzwa u bva Nyendavhusiku 2020 u ya kha Nyendavhusiku 2021, musu hu tshi fulufhelwa uri mishumo yothe i đo kona u bveledzwa na u khunyeledzwa u ya nga maga a tođeaho na u ya nga mugaganyagwama. Nga Luhuhu 2021, mvetomveto ya mimapa ya dzhiołodzikhala 1:100 000-dzo điswa kha murengi (Tshifanyiso tsha vhuŋumbiliťhanu) (Unango Domain) ane a khou fhedzisa tshibveledzwa tshihulwanesa tshithihi nga GEMMAP.

Thandela i khou tshimbila zwavhuđi u bveledza zwiŋveledzwa zwa u fhedzisela nga Fulwana 2021, hu na tshifhinga nga murahu tshi ņekedzwaho u itela muvhigo khumela wa murengo u bva kha komiti yapo i tshimbizaho, na u ita tshanduko dzi tođeaho. Maguvhangano ya u ťana thandela yo dzudzanyelwa Tshimedzi 2021 nga Khantsela wa Khođidzhi ya Zomba, Malawi, hu na tshitshavha, vhoraakademi na ņdowetshumo ya migodi vho rambiwa. Vha CGS vho wana u swika kha €1.3 miłioni u itela u dzhenela havho.



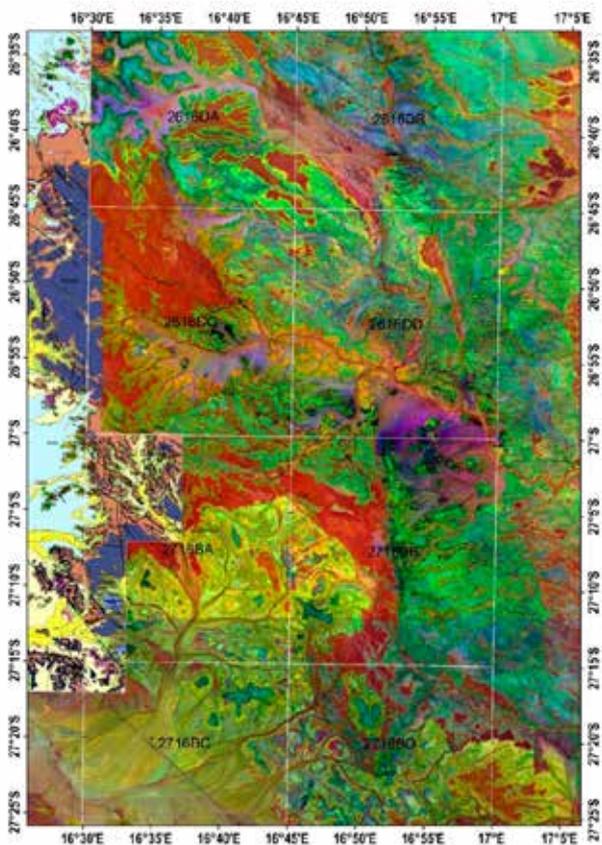
Tshifanyiso tsha vhu ŋumbiliťhanu. Mugodi wa u fhedzisela wa tshikalo tsha 1:100 000-rathi wa mapa ya dzhiołodzikhala wo điswa. Mbambedzo ya mapa ya kale yo gandiswaho (tshamonde) na miswa, mapa ya GEMMAP (tshauĳa). kha vha ťhogomele uri data ya nťha ya dzhiofisikhala yo shumiwa hani u sumbedza Dzhiołodzhi i konđaho ya nga fhasi fhasi ha Isha ĳa Malawi na Malombe (ho sumbedziswaho nga lutombo).

4.13 NZUDZANYO DZA DZHIOŁODZHIKHALA NA ȚHODİSISO DZA KHETHEKANYO YA ȚHODİSISO DZA DZHIOŁODZHIKHALA YA NAMIBIA

Vhubvo na ndivho: U bva nga Țhafamuhwe 2013, vha CGS vho rangaphanḁa thandela nzudzanyo dza tshikalo na u fhaḁa vhukoni tshipembe ha Namibia nga fhasi ha khonḁhiraka ya, na hu na tshumisano na, vha Țhodiḁiso ya Dzhiołodzhihkhala ya Namibia (GSN). Vhukati ha 2013 na 2020, Mbekanyamushumo ya Nzudzanyo ya Tshipembe ha Namibia yo bveledza mapa ya dzhiołodzhihkhala ya 89 nga zwikalo zwa 1:50 000 (mapa ya 86) na 1:250 000 (mapa miraru) i tshi tshimbizwa na ḁhalutshedzo dza dzhiołodzhihkhala, u itela digirii matshudeni a 15 vhutelwadigirii dza nḁha na u ganḁisa dzhenala dza fumithhi dza athikili na manweledzo ya maguvhangano a 23.

Tswikelelo na mavhala a nngwe: Mushumo kha khonḁhiraka (Phando 2021 u swika Țhafamuhwe 2022, FR-2021-5835) wo thoma. Thandela ntswa i ḁo ḁisa mashithi maḁwe a 12 a tshikeiḁi tsha 1:50 000-kha vhupo ha devhula ha Lüderitz na vhubvaḁuvha ha Aus na u sengulusa mumono wa tshanduko ya vhupo wa NNMP kha vhupo ha

Sperrgebiet. Zwibveledzwa zwa u fhaḁa vhukoni zwi katela vhulavhelesi ha thandela dza ḁhodiḁiso dza Masiḁasi ya radzhiołodzhi wa GSN, vhulavhelesi ha khathogirafa dza GSN na nḁisedzo nzudzanyo dzo bvelelaho na u ita ḁhodiḁiso dza khoso ḁhukhu na khandiso. Kha nḁwaha une wa khou sedzuluswa, thimu ya u dzudzanya yo ita tsenguluso dza kha khomphiyutha dza nyolo ya thekithoniki na ḁivhazwakale kha Sperrgebiet nga u shumisa data ya tshivhumbeo yo kuvhanganyiwaho nga 2019/20 kha ḁiga ḁa mbekanyamushumo ya dzhifisikhala, tshiedziswa tsha u takulwa ha didzhithala na data ya tshifanyiso ya satheḁaithi (Tshifanyiso tsha vhufumbilirathi). Muḁangano wa u thoma wo farwa ngei Windhoek u bva 21 u swika 26 Luhuh 2021 u lugisela thimu kha mushumo wa nḁḁa u ḁaho (u fhaḁa dathabeisi dza vhupo, u vhone u kule na u dzudzanya mapa wa mushumo wa nḁḁa). Khoso pfufhi kha tshumiso ya tshifanyiso tsha satheḁaithi tsha Sentinel 2 kha nzudzanyo yo ḁo ḁekedzwa kha vhashumi vha GSN. Nga Țhafamuhwe 2021, thimu ya vha CGS-GSN yo dzudzanya shithi nḁa devhula ha Lüderitz na u kuvhanganya iḁwe data na sambula kha dzingu ḁa Aus-Lüderitz-Bogenfels u itela dzingu na mushumo wa mumono wa tshanduko ya vhupo wa thandela.



Tshifanyiso tsha vhufumbilirathi. Tshifanyiso tsha Satheḁaithi ya Sentinel 2 tshine tsha vha na mushumo vhukuma kha u dzudzanya miraḁo yo fhambanaho ya Tshigwada tsha Ediacaran Nama kha vhupo ha vhubvaḁuvha ha Aus, Dzingu ḁa Karas, Namibia

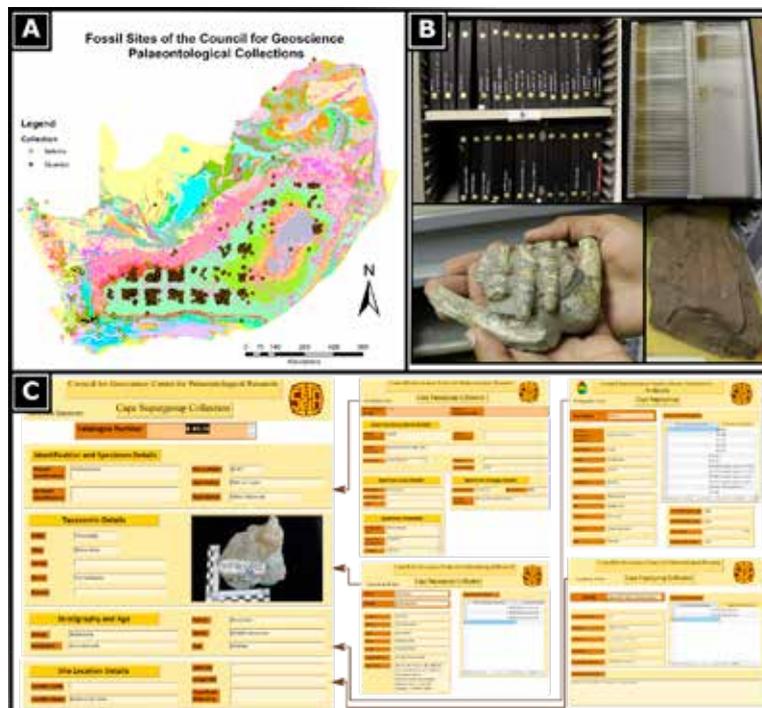
4.14 KHUVHANGANYO YA PALAEONTOLODZHI TSHUMELO DZA NQIVHO NA MAFHUNGO

Vhubvo na ndivho: Vha CGS vha farana u tshimbidza nthihi ya khuvhangano khulwanesa dza palaentolodzhi yo tšandavhuwaho (na ya ndeme) kha la Afrika Tshipembe, arali hu si dzhangho. Khuvhanganyo (ire kha ofisi dza Silverton na Bellville) i katela zwisumbedzi u bva kha Paleophuroterozoiki u swika kha zwifhinga zwa zwino zwa dzhiołodzhikhala, zwi nekudzaho rekhodo ine ya swika 2.1. nga n̄waha ya mumono wa vhutshilo u bva kha kuvhonele kwo khetheaho kwa Afrika Tshipembe. Khuvhanganyo i na zwisumbedzi zwi fhiraho 100 000 u bva kha mivhuso yothe ya vhutshilo ine ya katela mutevhe wothe wa siřiratigirafiki wa Afrika Tshipembe.

Tswikelelo na mavhala a nngwe: Khuvhanganyo zwa zwino i khou țolwa hu na zwisumbedzi zwa 885 zwi imelelaho zwisumbedzi zwothe u bva kha mbumbo dza Rietvlei, Bavianskloof na waboomberg dzo sedzuluswa na metadata yo khwiniswa. U swika

zwino, zwisumbedzi zwa fumbili zwo khetheaho zwa Afrika Tshipembe zwo topolwa, zwine zwa shuma sa zwisumbedzi zwa ndeme u itela matheriala wothe wa fosili une wa wanala u mona na shango. Sethe dza data na zwifanyiso zwo aluwa u swika kha data yo dzheniswaho 2 339 na 95, nga u tevhekana, ngeno hune sethe ya data ya ArcGIS ya vha hone ho fhařwa hu tshi imela fhethu ho diimisaho ha 9 088 u bva kha shithi dza n̄da dza didzhithala na data ya vhupo ya didzhithala. Ho itwa tshivhumbeo tsha u vhekanya data u itela u khwinisa u vhekanywa ha fhethu afha ha data ya qivhazwakale (Tshifanyiso tsha vhumfumbilisumbe). Zwiñwe hafhu, sethe dza data idzi dzo țanganyiswa dza vha dathabeisi ya prototype hybrid Access-ArcGIS dathabeisi ine kanzhi ya engedza ndango ya mafhungo, mukano wa mushumisi na tzedzuluso dza ndeme ya data.

Ndingothangeli dzo itwa u itela khuvhanganyo ya palaeontolodzhikhala ngei ofisini ya Silverton, zwine zwa do vha pulane ya ndeme ya bvedza thandela kha n̄waha ya muvhalelano muswa.



Tshifanyiso tsha fumbilisumbe. Vha CGS mbekanyamushumo ya khuvhanganyo ya palaeontolodzhikhala. a) Mapa u sumbedzaho fhethu ha GPS ya saithi ya fosili u bva kha khuvhanganyo ya vha CGS. b) Zwisumbedzi zwa ndeme zwo wanalaho musu wa ndingo ya khuvhanganyo ya palaeontolodzhikhala kha ofisi ya Silverton. Khuvhanganyo khulwane ya zwisumbedzi palinolodzikhala zwa ndeme zwa ikonomi. Nga n̄ha: Masalela o sumbedziswaho a muřořo. nga fhasi kha tshamonde: Masalela a phukha nthihi ya kalessa, Pteridium simplex. c) Fhasi kha tshauřa: Mukano wa dathabeisi ya prototype Access-ArcGIS une wa sumbedzisa zwikirini zwa u dzhenisa sethe dza data dzo vhalaho dzi dzhenaho kha dathabeisi.

4.15 THEKHINOLODZHI YA MAFHUNGO NA VHUDAVHIDZANI

Musi wa nwaha une wa khou sedzuluswa, ho itwa mvelaphanda khulwane kha u shumisa senthara ya data i sa duri nahone i pfa dzaho na themamveledziso, tshipiḁa tsha ndeme tsha tshanduko ya didzhithala tsha vha CGS. Ho pfuluswa tshumelo dza furathi ina u bva kha u vha dza kale u ya kha u vha themamveledziso ntswa. Ho dzheniswa themamveledziso ntswa ya u tikedza kha senthara ya data ya ndeme. Lani dza data dza ofisi dza dzingu dza Bellville, Pietermaritzburg, Polokwane na Port Elizabeth dzo khwiniswa u bva kha ADSL u ya kha faiba. Netiweke themamveledziso ya mafhungo na vhudavhidzani (ICT) yo dzheniswa kha ofisi dza Donkerhoek u kwaḁhisedza uri tshumelo dzi swikelelee kha vhashumisani vhoḁhe. mbekanyamaitete ya thikhedzo ya ICT yo sedzuluswa, senthara ya data na u vusuludzwa ha themamveledziso hu kha liga la u fhedzisela la thandela u itela u kwaḁhisedza vhutsireledzi na ndondolo i sa gumi.

Sa tshipiḁa tsha ḁhanganelo ya maitete a tshumisano ya mabindu, sisiḁeme dzo vhalaho dza mabindu dzo vha dzi khou shumiswa musu wa nwaha une wa khou sedzuluswa, hu tshi katelwa vhupulani ha zwiko zwa bindu (ERP) ho itwaho kha dziḁwe tshumiso sisiḁeme na tshumiso ya sisiḁeme ya vhupulani ha zwiko ya vhubindudzi sa tsumbo vhuvhusi ha thandela hu hone, zwidodombedzwa zwa bindu zwa maḁwe masia anea nga sa ndangulo ya vhukoni ha vhatu zwo fhedzwa na zwiḁwe zwi nga ho sa zwa masheleni, ndangulo ya ndisedzo ya tshumelo na thandela zwi khou khunyeledzwa. Ofisi ya ndangulo ya thandela yo no ḁi thomiwa nga kha u tholwa ha muḁetshedzatshumelo wa u lavhelesa tshumiso ya bindu a konisa thandela dzi katelwaho ERP. Vhuthomi hoḁhe ho ḁangana hu sumbedziswa kha phimo ya u wanala ha tshumelo dza ICT ye ya si vhuye ya vha nga fhasi ha 99% nga nwaha wa nwaha wa muvhalelano wa 2020/21.

5. PHADALADZO YA MAFHUNGO

Vha CGS vha phadaladza mvelelo dza tshodiso dzavho kha vhashumisani kha mutevhe wa khandiso hu tshi katelwa nganeavhutshiloine, bulethini, thalutshedzo, mivhogo ya nwaha ngawaha, athikili dza midia, matshimbidzele a khoniferentsi na mimapa bnahone izwi zwi nekedzwa kha khethekanyo dza 7.1 u swika kha 7.3. zwo sedzwaho hafhu nga dzangano kha ndaela u wanala ha data ntswa ya masia othe zwo bveledza tshumisano ntswa ya nga nnda na mveledziso ya dziuwe khandiso.

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5.4 ATHIKILI DZA MIDIA

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TSHIPIĐA C:

Kuvhusele

Kuvhusele kwa bindu kwa vha CGS ku katela sisiṭeme na zwivhumbeo zwa CGS na maitele ane tshiimiswa tsha langiwa, u tshimbizwa na u vha na vhuḍifhinduleli. Zwi shumiswa nga kha milayo i shumiswaho ya mulayo wayo u konisaho, Mulayo wa Saintsi dza vhupo, Mulayo wa Vhu 100 ya 1993, sa zwe wa khwiniswa, Mulayo wa Ndangulo ya Masheleni a Nnyi na Nnyi (PFMA) (Mulayo wa vhu 1 ya 1999, sa zwe wa khwiniswa), Ndaulo ya Vhufaragwama, na Phurotholo dza Kuvhusele kwa Bindu kha Sekithara ya Nnyi na Nnyi, na mbekanyamaitete ya dzangano, Tshipiḍa itshi tsha muvhigo tshi dodombedza sisiṭeme dza kuvhusele dza tshiimiswa, tshivhumbeo na maitele.

- Bodo na komiti dzayo - tshivhumbeo tsha Bodo na komiti, u pfumbudza ha Bodo, magavhelo a Bodo na vhuḍifari, mushumo na vhuḍifhinduleli ha Bodo.
- U tevhedza milayo na ndaulo - tshiimo tsha u tevhedza ha CGS na zwo randelwaho zwa theo ya mulayo.
- Ndango dza nga ngomu na ndangulo ya khohakhombo - muhanga wa ndangulo ya khohakhombo yo shumiswaho na kushumele kwa ndango dza nga ngomu kha tshiimiswa.
- Vhufhura na vhuḍa - maga a u wana na u fhelisa nyito dza vhuḍa.
- U ṭola muvhalelano ha nga nḍa - nyito dza mishumo ya u ṭola muvhalelano ya nga ngomu.
- Khwaṭhisedzo ya ndeme - vhuimo ha khwaṭhisedzo ya ndeme.
- Zwiteṅwa zwa mutakalo, tsireledzo na vhupo - u tevhedza maga a vhotsireledzi, mutakalo, vhupo na ndeme (SHEQ).

Thimu ya ndangulo ya nḥa yo sedzaho mapa wa saintsi ya vhupo na matombo a lumeme lwa vhukovhela ha Kheis Belt u mona na lumeme lwa Kaapvaal Craton

1. VHULANGULI VHUHULWANE

Minisiṭa wa Zwiko zwa Minerala na Fulufulu, (Minisiṭa), nga kha Bodo ya CGS, u na vhuḍifhinduleli ha ndango, ndangulo na ndangulo ya kushumele kwa CGS. Nga yeneyo ndila, tshiimiswa tshi swa mivhigo kotare na ṅwaha muṅwe na muṅwe u ya nga ha Ndaulo dza Vhufaragwama ha Lushaka (26.1) kha DMRE, nga ḷa 30 Lambamai, 31 Fulwana, 31 Thimedzi na 31 Phando, nga nṅa ha musu ho ṅewa iṅwe ndaela nga Vhufaragwama ha Lushaka.

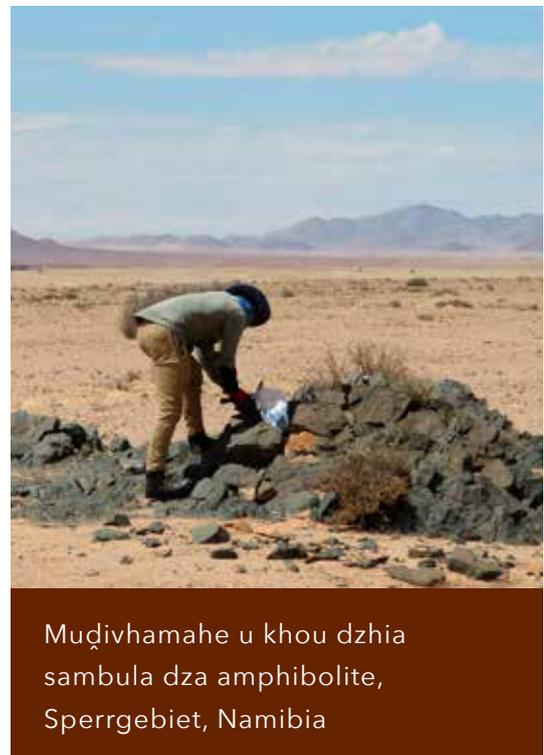
2. BODO YA KHORO YA ZWA SAINTSI YA VHUPO

2.1 KUVHUMBELWE KWA BODO NA MISHUMO

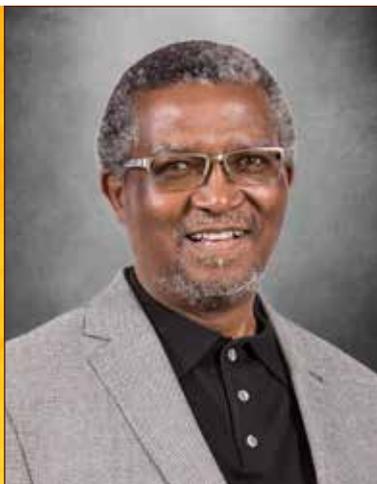
Minisiṭa vho thola Bodo ya CGS u thoma nga ḷa 1 Shundunthule 2020, u ya nga ha Khethekanyo ya vhuṅa ya Mulayo wa Saintsi dza vhupo, Mulayo wa Vhu 100 wa 1993 sa zwe wa shandukiswa u swika 30 Lambamai 2023. Bodo i na miraḍo ya fumimbili i si ya vhalanguli, miṅa ya nyengedzedzo na nthihi muthihi ya vhalanguli, are CEO. Mudzulatshidulo wa Bodo ndi muraḍo wa vhalanguli o ḡiimisaho na mishumo na Mudzulatshidulo na CEO yo sumbedziswa zwavhuḍi.

2.2 BODO YA ZWINO - 1 SHUNDUNTHULE 2020 U SWIKA 30 LAMBAMAI 2023

Bodo ya zwino yo tholwa nga Minisiṭa u thoma nga ḷa 1 Shundunthule 2020. Bodo i katela Mudzulatshidulo (o ḡiimisaho), na miṅwe miraḍo ine ya si vhe ya vhalanguli na miraḍo nyengedzedzwa miṅa na CEO (muraḍo wa vhalanguli).



Muḍivhamahe u khou dzhia sambula dza amphibolite, Sperrgebiet, Namibia



Dokotela Vho Humphrey Mathe
Mudzulatshidulo wa Bodo

ZWIKILI NA TSHENZHELO:

Dokotela Vho Mathe vho tholwa sa Mudzulatshidulo wa Bodo nga 1a 1 Shundunthule 2020. Ndi mudivhamahe o gudelaho a re na MSc (Tsedzululo ya Minerala) a bvaho Yunivesithi ya Rhodes, PhD (Applied Geology) u bva Yunivesithi ya Natal, Durban na Advanced Management Programme (AMP) u bva Insead, Fontainebleau, France. Dokotela Vho Mathe ndi Muofisiri Mulanguli Muhulwane wa Tranter Resources Pty Limited. Kale vho vha vhe Muofisiri Mulanguli Muhulwane wa Scinta South Africa Pty Limited, khamphani ya zwiko zwa malasha na Minidzhere Mulanguli: Corporate Services ngei Exxaro Resources Limited phanda ha izwo vho vha vhe COO na Mulanguli Muhulu wa Eyesizwe Coal Pty Limited. Vho shuma kha ndowetshumo ya migodi vhutshilo havho hothe lwa miwaha ya 45 ya tshenzhelo. **Vho vha vhe mulweli wa Boss ya the Year ya 2008.** Dr Mathe vho shuma kha bodo ya Talent10 Holdings Pty Limited, Scinta South Africa Pty Limited (Mudzulatshidulo a ne a si vhe mulanguli), Tranter Holdings Pty Limited, Tranter Resources Pty Limited (CEO), Khoro ya Santsi ya vhupo (Mudzulatshidulo a ne a si vhe mulanguli), Handa Mining Corporation (TSX listed), Cape Copper Oxide Company (Non-Executive Chairman), Empowerment Capital Investment Partners (Non-Executive Chairman) na Wescoal Holdings Limited [(JSE listed) Non-Executive Chairman]. Vho dovha vha shuma kha Komiti ya Vhubindudzi ya Acrux Resources Pty Limited. Ndi murafo wa Geological Society ya South Africa na vho dovha vha dihwalisa na SACNASP sa rasaintsi.



Vho Mosa Mabuza
Muofisiri Mutshimbidzi Muhulwaneer

ZWIKILI NA TSHENZHELO:

Vho Mabuza ndi Mudivhamahe are na Honasi ya vhudivhamahe na Dipuloma ya ntha ha Vhutelwa Digirii kha Ndaulo ya Vhubindudzi. Vho tholwa sa murafo wa Bodo nga 1a 1 Shundunthule 2020. Ndi vhone CEO wa zwino zwa CGS nahone vho tholwa nga 1 Fulwana 2017. Vho Mabuza vho shuma ngei De Beers sa Explorationist, Laboratory Geologist na Musaukanyi Muhulwane wa zwa Vhubindudzi kha DMRE sa Mulangi Muhulwane wa Thuthuwedzo ta Minerala, kha Anglo American Platinum sa Thoho ya Vhushaka ha zwa Muvhuso na ngei DMRE sa Muthusa Mulangi Muhulwane wa Thuthuwedzo na Mbekanyamaitela dza Minerala.



Vho Xolisa Mvinjelwa
Murafo wa bodo

ZWIKILI NA TSHENZHELO:

Vho Mvinjelwa vha na Bachelor of Science kha Chemistry u bva Yunivesithi ya Cape Town, Masters in Business Administration u bva WITS Business School, Thanziela ya Management Advanced Programme u bva WITS Business School na Dipuloma ya Production Management u bva Production Management Institute of South Africa. Vho tholwa u vha murafo wa Bodo na 27 Shundunthule 2021. Vha na tshenzhelo ine ya fhira miwaha ya 30 kha Ndowetshumo ya Migodi he vha thoma bufo lavho ngei Vereeniging Refractories (khamphani ya vha Anglo American) sa Technical Assistant kha R&D Department musi vha khou aluwa kha khamphani vho do vha Process Controller, Quality Superintendent, Plant Manager, Market Analyst na Technical Sales Representative. Nga murahu vha dzhoina Rhino minerals (kha khamphani ya vha ANGLOVAAL) sa Assistant Technical Marketing Manager he vha vha na vhudivhinduleli ha u bvedza vhavhambadzi vhaswa kha dzhango. Vho vha vha khou dishuma kha IMERYS South Africa (kha khamphani ya vha IMERYS) miwahani ha 20 yo fhiraho vho fara zwiimo zwo fhambanaho lwa miwaha hu tshi katelwa Sales & Marketing Manager, Mulangi: Special Projects, Head of HR, Policy & Strategy, Head of Strategy & Corporate Services and Board Secretary. Zwa zwino ndi Mulangi Muhulu: Ethics & Transformation ngei IMERYS South Africa na Chairman ya the Social & Ethics Committee wa bodo. Sa ramabindu, vho dzula kha bodo dzo fhambanaho dza dzikhamphani dzi re zwa migodi na ndowetshumo dzi elanaho nadzo. Ndi Mudzulatshidulo wa Coastal Fuels, ine ya vha khamphani thukhu ya ndaka ya malasha. Vha dovha vha vha Mudzulatshidulo wa Ticamode, khamphani ya BBBEE ine ya shumisana na IMERYS.



Vho Beeuwen Gerrys:
Muraǎo wa Bodo

ZWIKILI NA TSHENZHELO:

Gerryts ndi Mechanical Engineer a re na Master's in Engineering Management (thekhinoǎodzhi na ndangulo ya vhubveledzi) u bva Yunivesithi ya Pretoria. Vho tholwa u vha muraǎo wa Bodo nga 1 Shundunthule 2020. Vha khou shuma kha Muhasho wa Saints na Vhubveledzi sa Mulangi Muhulu wa Technology Localisation, Beneficiation na Advanced Manufacturing. Vha na tshenzhelo khulu kha thǎodiso na ndangulo ya vhubveledzi, ICT na zwidodombedzwa zwa sisiteme dza zwibveledzwa, mveledziso ya Ombekanyamaitele, khandiso dza thǎodiso na mveledziso na mveledziso ya ndowetshumo.



Vho Rosalind Mdubeki:
Muraǎo wa Bodo

ZWIKILI NA TSHENZHELO:

Vho Mdubeki vho tholwa sa muraǎo wa Bodo nga 1a 1 Shundunthule 2020. Vho vha vhe na Bachelor's in Surveying, na National Diploma in Surveying na Thanziela ya zwa Project Management. Vho shuma Eskom sa Survey Technician na Engineer a gudiswaho nahone zwino vha shuma sa Surveyor General: Bloemfontein (vha na vhuǎfihindleli ha Free State na Northern Cape) kha Muhasho wa zwa Vhulimi, Mvusuludzo ya Mavu na Mveledziso ya Mahayani.



Vho Sibongile Malie:
Muraǎo wa Bodo

ZWIKILI NA TSHENZHELO:

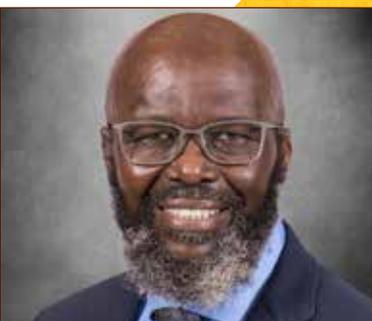
Vho Malie vho tholiwa sa muraǎo wa Bodo nga 1a 27 Shundunthule 2020. Vha na Baccalaureus Legum (LLB) tshenzhelo khulwane kha zwa migodi na minerala, yo wanalaho kha miwaha ya 17 na vha DMRE. Vha na u pfesesa ho kwhaṁhaho ha theo ya mulayo na muhanga wa ndaulo wa sekithara ya migodi. Zwa zwino ndi mulangi : Mineral Policy Development kha DMRE.



Vho Deborah Mochothli:
Muraǎo wa Bodo

ZWIKILI NA TSHENZHELO:

Vho Mochothli vho tholwa sa muraǎo wa bodo nga 1a 1 Shundunthule 2020 nahone vha na Master's in Environment and Society, B-Tech ya Environmental Health, BA Honours ya Public Administration na a BA ya Social Science. Vho shuma kha Muhasho wa Maǎi na Tshampungane sa Mulangi Muhulu wa Director for Regulations and Water Use, kha South African National Parks sa Minidzhere: Environmental Audits na kha Tshitiiriki tsha Mafikeng sa Chief Environmental Health Officer.



Vho Smunda Mokoena:
Muraǎo wa Bodo

ZWIKILI NA TSHENZHELO:

Vho Mokoena tholwa sa muraǎo wa Bodo nga 1a 1 Shundunthule 2020. Vha na B Sc ya Engineering, MBA na u vha na Government Certificate of Competence (GCC) ya Mines and Works. Vha na tshenzhelo nnzhi ya u shuma sa mulangi kha bodo dzo vhalaho. Zwa zwino ndi Mulangi Muhulu wa Best Infrastructure and Investments and Service Delivery Solutions (Pty) Ltd kathihi na Muraǎo a si wa misi yoṁhe na Mudzulatshidulo wa National Public Transport Regulator (NPTR) na Muraǎo a si wa misi yoṁhe Mulanguli wa National Energy Regulator (NERSA). Vha na miwaha minzhi ya tshenzhelo kha ndowetshumo ya migodi na fulufulu kha sekithara tha phuraivethe na ya nnyi na nnyi.



Vho Lebogang Madiba:
Muraḁo wa Bodo

ZWIKILI NA TSHENZHELO:

Vho Madiba vho tholwa sa muraḁo wa Bodo nga 1a Shundunthule 2020. Vha na Bcom, BCom Honours in Economics u bva Yunivesithi ya Pretoria, na Master's ya Finance in Economic Policy u bva Yunivesithi ya London (SOAS) na Executive Leadership Programme u bva UNISA School of Business Leadership. Zwa zwino vha shuma sa Mulangi Muhulu: Economic Services ngei, Public Finance kha National Treasury kathihi na Economic Development Function Group Leader a re na vhuḁifhinduleli ha mugaganyagwama na zwi elanaho nawo wa mihasho yo vhalaho na zwiimiswa zwayo zwa muvhuso. Zwa zwino, vha khou shuma sa mulangi a si wa ekizekethivhi wa Bodo ya South Africa Diamond and Precious Metal Regulator. Kale vho vha vha tshi shuma sa Deputy Treasurer: Front Office na Structured Finance kha Transnet SOC LTD na Director: Country Risk nga ngomu ha Asset and Liability Division ya Vhufaragwama ha Lushaka vha dovha vha vha muraḁo wa Reserve Management Committee ya Bannga ya Khulwane ha Afrika Tshipembe 2018.



Dokotela Vho Thuli Khumalo:
Muraḁo wa Bodo

ZWIKILI NA TSHENZHELO:

Dokotela Vho Khumalo vho tholwa sa muraḁo wa Bodo nga 1 Shundunthule 2020. Vha na PhD ya Environmental Science, Ṭhanziela ya Management Development Programme na Gordon Institute for Business Science na u bveledza Master of Philosophy in Corporate Strategy. Vho shuma kha vhuimo ha vhalangi ho vhalaho, hu tshi katelwa mushumoni wavho zwino sa Deputy Director-General of Climate Change and Air Quality kha Muhasho wa Vhusimamaḁaka, Vhureakhovhe na Vhupo.



Dokotela Vho Sabelo Malaza:
Bodo wa Nyengedzedzo

ZWIKILI NA TSHENZHELO:

Dokotela Vho Malaza vho tholwa kha Bodo sa muraḁo nyengedzedzo nga 1a Shundunthule 2020. Vha na Master's in Business Administration, digirii ya B Phil ya zwa Knowledge na Information Management, digirii ya Bachelor of Science kathihi na Management Development Programme nga vha Gordon Institute for Business Science. Ndi Environmental Management Practitioner vha re na tshenzhelo ine ya fhira miḁwaha ya 18 kha sekithara ya nnyi na nnyi. Vho shuma kha Muhasho wa Vhusimamaḁaka, Maḁi na Tshampungane na kha Muhasho wa Vhupo, Vhusimamaḁaka na Vhureakhovhe kha vhuimo ho fhambanaho. Zwa zwino ndi Mulangi Muhulu a re na vhuḁifhinduleli ha u shumana na ndingo dza masiandaitwa a vhupo kha Muhasho wa Vhureakhovhe, Maḁaka na Vhupo.



Adv Ntika Maaake:
Muraḁo wa Bodo

ZWIKILI NA TSHENZHELO:

Adv Maaake vho tholwa sa muraḁo wa Bodo nga 1 Shundunthule 2020. Vha na di0girii ya B. Iuris na LLB, Dipuḁoma ya Corporate Governance (UNISA). Dipuḁoma ya Project Management (Executive College) Ṭhanziela ya Post Graduate Certificate in Climate Change and Energy Law, Post Graduate Certificate in Water Law (Wits) Master of Laws kha Extractive Industries in Africa, Nkhetheni wa LLD kha Property Law (Property Clause) (University ya Pretoria). Vho shuma kha zwiimiswa zwa nnyi na nnyi zwo vhalaho hu tshi katelwa Eskom Holdings, ḁorobo ya Tshwane na Muhasho wa Lushaka wa Vhulamukanyi na Mveledziso ya Ndayotewa. Zwa zwino ndi Mudzulatshidulo wa Water Tribunal kha muhasho wa Vhudzulo ha Vhathu, Maḁi na Tshampungane. Muraḁo wa Komiti Ndaṱisi ngei kha Premier Soccer League.



Vho Adila Chowan:
Muraḡo wa Bodo

ZWIKILI NA TSHENZHELO:

Vho Chowan vho tholiwa sa muraḡo wa Bodo nga 1a 1 Shundunthule 2020. Ndi Chartered Accountant vha na ndalukanyo dza LLB. Vho Chowan vha dovha vha vha Admitted Advocate ane a khou shu na e Duma Nokwe Chambers. Vho shuma kha bodo dza khamphani dza phuraivethe na dza nnyi na nnyi sa Mulangi wa Edizekethivi na Muraḡo wa Komiti ya zwa Muvhalelano.



Dokotela Vho Jennifer Mirembé:
Muraḡo wa Bodo

ZWIKILI NA TSHENZHELO:

Dokotela Vho Mirembé vho tholwa kha Bodo sa muraḡo nga 1a 27 Shundunthule 2020. Vha na digirii ya Vhudokotela ha Town Planning, Master's ya City Planning na ndalukano dza ndangulo dzo vhalaho. Vho shuma kha vhuimo ha nṱha ho vhalaho, hu tshi katelwa mushumo wa zwino wa Mulangi wa Delivery Channel Management na Chief Town Planning kha Muhasho wa Lushaka wa Vhudzulo ha Vhathu.



Vho Pontso Tsotetsi:
Muraḡo wa Bodo wa Nyengedzedzo

ZWIKILI NA TSHENZHELO:

Vho Tsotetsi vho tholwa kha Bodo sa muraḡo nyengedzedzo kha Vho R Mdubeki nga 1a 1 Shundunthule 2020. Vha na Bachelor's in Land Surveying, Dipuḷoma ya Land Surveying na Ṱhanziela ya Advanced Management Development Programme. Zwa zwino vha shuma sa Deputy Surveyor General: Gauteng kha Muhasho wa zwa Vhulimi, Mvusuludzo ya Mavu na Mveledziso ya Vhupo ha Mahayani.



Vho Paul Nel:
Muraḡo wa Bodo wa Nyengedzedzo

ZWIKILI NA TSHENZHELO:

Vho Nel vho tholwa kha Bodo sa muraḡo nyengedzedzo D Mochotlhi nga 1a 1 Shundunthule 2020. Vha na digirii ya BCompt Honours nahone ndi Chartered Accountant and Information Systems Auditor. Vho shuma sa Mulangi Muhulu wa Muhasho wa Maḡi na Tshampungane, Managing Director wa Integrated Business Control South Africa, Senior Financial Officer kha zwiimiswa zwa bannga zwo vhalaho na Audit Manager for Deloitte.



Vho Andries Moatshe:
Muraḡo wa Bodo wa Nyengedzedzo

ZWIKILI NA TSHENZHELO:

Vho Moatshe vho tholwa kha Bodo sa muraḡo nyengedzedzo kha Vho Malie nga 1a 1 Shundunthule 2020. Vha na Master's ya Environmental Management na a Higher Diploma ya Public Health. Zwa zwino vha khou shuma kha DMRE sa Mulangi Muhulu wa Mine Environmental Management na u dzehenelela kha mveledziso ya mbekanyamaitele ya muhasho.

Bodo i shuma na u tšanganedza mishumo ya masheleni sa zwe ya sumbedzwa kha Khethekanyo ya 50 ya the PFMA (Mulayo wa Vhu 1 ya 1999, sa zwe wa shandukiswa), une wa tšoda uri, mirađo ya Bodo:

- 2.1.1 I shume mishumo nga vhulondo vhuhulu u khwaṭhisedza tsireledzo pfađzaho ya ndaka na rekhodo dza tshiimiswa;
- 2.1.2 Vha shume hu na vhuluvha, u fulufhedzea na tshirunzi ho sedzwa madzangalelo a vha CGS kha u langa zwa masheleni zwa vha CGS;
- 2.1.3 Vha si shume nga nđila ine ya si fane kha vhuđifhinduleli he vha telwa sa mirađo ya Bodo;
- 2.1.4 Vha si shumise zwiimo zwavho/maanda avho kana mafhungo a tshidzumbe ane vha a wana sa mirađo u itela u đivhuedza kana u vhuelwa zwi songo tea kana u vhuedza muñwe muthu na
- 2.1.5 U bvisela khagala na u bula madzangalelo a songo livha ane mirađo na vhafarisi vhavho na miṭa yavho vha nga vha vhe nao ane a nga vha khuđano ya madzangalelo.

Bodo i shumisa miano ya ñwaha nga ñwaha ya madzangalelo na mulevho wa dzangalelo kha komiti inwe na inwe na muṭangano wa Bodo na u khwaṭhisedza uri mirađo i bvisela khagala khuđano dza vhukuma kana dzi humbulelwa dziñwe na dziñwe kha Vhulanguli ha Muvhalelano. Mirađo ya bodo i tea u sedza kha matshimbidzele musi mulandu u tshi lavheleswa nga nndani ha musi Bodo i tshi nga dzhia tsheo yo fhambanaho.

Ho sedzwa mbetshelwa dza Mulayo wa Saintsisi ya Vhupo, Mulayo wa Vhu 100 ya 1993 sa zwe wa shandukiswa, vha vhale na PFMA, Bodo i na vhuđifhinduleli ha kushumele kwa vha CGS. Bodo i đo shumisa ndango na u langa mishumo ya vha CGS, u bula sia la tshiṭirathedzhi la tshiimiswa, na u tendela bono, tshipikwa, zwipikwa zwa tshiṭirathedzhi na mbekanyamaitele dza dzangano.

Nṭhani ha izwo, mirađo ya Bodo i tšola u tevhedza mbekanyamaitele ya kushumele na zwa saintsisi, vhulanguli, ndaulo na zwipikwa zwa masheleni. Bodo lina vhuđifhinduleli ha u khwaṭhisedza uri vha vha CGS vha londota sisiteme dzi pfađzaho dza kushumele na ndangulo ya masheleni, ndangulo ya khohakhombo na vhuṭolamuvhalelano ha nga ngomu, na thengo i sa dzhii sia, ya muṭaṭisano na ine ya sa đure.

Bodo i na vhuđifhinduleli ha u rangaphanda, u langa, na u langula bindu la vha CGS, na u dzhia vhurumelwa nyangaredzi ho dzhiwaho ya muhanga wa vhulanguli u ya nga ha khethekanyo ya 56 ya PFMA, ine ya rumela ndangulo ya đuvha nga đuvha ya zwithu zwa vha CGS na kha CEO. Vhurumelwa ha mbekanyamaitele ya vhulanguli a vhu fhungudzi maanda a Bodo kha vhuđifhinduleli hayo na ha tshiimiswa.

2.3 THENDELONZIWA YA BODO NA VHUĐIFHINDULELI HA BODO

Thendelonziwa ya bodo, ine ya sedzuluswa ñwaha nga ñwaha i bula zwi tevhelaho:

- a) Mishumo ya vhurangaphanda ha Bodo, vhulamukanyi na sia la tshiṭirathedzhi;
- b) Kuvhumbelwe kwa bodo;
- c) Vhuđifhinduleli, mishumo ya masheleni na vhuđifhinduleli;
- d) Khoudu ya vhuđifari ya Bodo;
- e) Ndayotewa na kutholelwe kha komiti;
- f) Kuvhusele na maitete a miṭangano;
- g) Ndangulo ya khuđano ya madzangalelo;
- h) Vhuđifhinduleli ha u dzhia ya pulane dza tshiṭirathedzhi na u tšola kushumele na ndangulo;
- i) U vhona na u tendela mbekanyamaitele;
- j) Ndangulo ya khohakhombo;
- k) U nangiwa ha bodo, vhuṭfumbudzi na nyelelo.

2.4 VHUPFUMBUDZI HA BODO NA U ĐIVHADZWA MUSHUMO

Vha CGS vha na mbekanyamushumo ya vhuṭfumbudzi.

2.5 VHUGUDISI NA MIRADŌ MISWA YA BODO

Mulanguli es mbekanyamushumo dza mveledziso u khwaṭhisedza uri mirađo ya Bodo vho gudiswa nga nđila yone na u vha na ndivho yo teaho ya mveledziso kha maitete a khwiñesa na milayo ya kuvhusele kwa bindu. Nga kha mivhigo ya kotare na mbekanyamaitele, mirađo ya Bodo i dzula i tshi đivha zwivhumbeo zwa kuvhusele kwa CGS, thandela dza tshiṭirathedzhi na kushumele kwa tshiimiswa u itela kushumele u vha konisa u khunyeledza mishumo yawe na vhuđifhinduleli.

2.6 MIṬANGANO YA BODO

Bodo yo fara miṭangano ya rathi nga 2020/21. Thebulu dzi dodombedzaho dzhenelele kwa miṭangano ya muraḍo wa Bodo muṅwe na muṅwe kha ṅwaha.

Thebulu ya 6. Miṭangano ya Bodo

Miraḍo ya Bodo	27 Shundun-thule 2020	29 Fulwana 2020	27 Thangule 2020	29 Khubvumedzi 2020	29 Tshimedzi 2020	28 Phando 2021	Tshivhalo tsha miṭangano yo dzhenelwaho
Dokotela H Mathe (Mudzulatshidulo)	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	6
Vho M Mabuza (CEO)	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	6
Vho X Mvinjelwa (Muthusa Mudzulatshidulo)	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	6
Dokotela T Khumalo	Vha hone	Pfarelo	Vha hone	Pfarelo	Pfarelo	Pfarelo	2
Vho S Malaza	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	6
Vho D Mochotlhi	Vha hone	Vha hone	Vha hone	Vha hone	Pfarelo	Pfarelo	4
Vho P Nel*	Pfarelo	Pfarelo	Pfarelo	Vha hone	Pfarelo	Vha hone	2
Vho R Mdubeki	Pfarelo	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5
Vho P Tsotetsi*	Vha hone	Vha hone	Pfarelo	Vha hone	Vha hone	Vha hone	5
Adv N Maake	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Pfarelo	5
Vho S Mokoena	Vha hone	Vha hone	Vha hone	Pfarelo	Vha hone	Vha hone	6
Vho A Chowan	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	6
Dokotela J Mirembe	-	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5
Vho B Gerryts	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	6
Vho A Moatshe*	Pfarelo	Pfarelo	Pfarelo	Pfarelo	Pfarelo	Pfarelo	-
Vho S Malie	-	Pfarelo	Vha hone	Pfarelo	Vha hone	Pfarelo	2
Vho L Madiba	Vha hone	Pfarelo	Pfarelo	Vha hone	Vha hone	Vha hone	4

* alternative Board members

2.7 MBADELO DZA BODO

Mbadelo dza miraḍo ya Bodo dzi tiwa nga Minisiṭa wa DMRE hu na vhukwamani na Minisiṭa wa zwa Masheleni, sa zwe zwa bviselwa khagala kha notsi ya 12 ya notsi dza zwitatamennde zwa masheleni.

Thebulu ya 7. Mbadelo dza miraḍo ya bodo (2020/21)

Miraḍo ya bodo	Mbadelo	Maṅwe magavhelo	Maṅwe magavhelo*	Thanganyelo
Dokotele Mathe H	168 406.00	-	7 190.19	175 596.19
Vho Mokoena S	107 217.00	-	-	107 217.00
Adv Maake N	131 328.00	-	364.59	131 692.59
Vho Chowan A	113 238.00	-	-	113 238.00
Vho Mvinjelwa X	149 580.00	-	-	149 580.00
Dokotele Mirembe J	128 641.00	-	-	128 641.00
Dokotele Khumalo T	-	-	-	-
Vho Malie S	-	-	-	-
Vho Malaza S	-	-	-	-
Vho Nel P	-	-	-	-
Vho Mdubeki R	-	-	-	-
Vho Mochotlhi D	-	-	-	-
Vho Tsotetsi P	-	-	-	-
Vho Madiba L	-	-	-	-
Vho Moatshe A	-	-	-	-
Vho Gerryts B	-	-	-	-
Mr Gerryts B	-	-	-	-

Maṅwe magavhelo* a katela namagavhelo a u kona u tshila.

2.8 KOMITI DZA BODO

U ya nga ha Khethekanyo ya vhu 15 ya the Mulayo wa Saintsia ya vhupo, mulayo wa Vhu 100 ya 1993 sa zwe wa shandukiswa, Bodo i nga thoma komiti ine ya do livhana, ho sedzwa sia la Bodo, u shuma mishumo ine ya nga sa ine Bodo ya do ta misi yothe. Zwiwe hafhu, Khethekanyo ya vhu 56 ya 56 ya the PFMA (Mulayo wa Vhu 1 ya 1999, sa zwe wa shandukiswa) i nekedza uri vhuwe vhuifhinduleli ha Bodo vhu tea u nekedzwa komiti dza Bodo na ndangulo ya vha CGS hu si na u dzhia mishumo ya Bodo na vhuifhinduleli. Komiti dza Bodo, zwenezwo, dzi lavhelelwa u ita themendelo kha Bodo yothe phanda ha u shumisa tsheo dza tshirathedzhi nga vha ndangulo. Vha tshi khou laedzwa nga Khethekanyo 15 ya the Mulayo wa Saintsia ya vhupo, Mulayo wa Vhu 100 ya 1993 sa zwe wa shandukiswa, Khethekanyo ya 56 ya PFMA na themendelo dza King Code, Bodo yo vhumbiwa na u vha na vhurumelwa kha mishumo miwe yayo kha komiti nga dza Bodo dzo tevhelaho:

2.8.1 KOMITI YA KHOHAKHOMBO NA VHUṬOLAMUVHALELANO

Komiti ya Khohakhombo na Vhuṭolamuvhalenano yo thomiwa u ya nga Khethekanyo ya 77 ya PFMA na Ndaulo dza Vhufaragwama ya Lushaka 27. Komiti i shuma mishumo yayo u ya nga ha thendelonzwiwa ya Komiti ya Vhuṭolamuvhaleno na Khohakhombo, ine ya bula kuvhumbelwe kwa komiti, mishumo na vhuifhinduleli. i dzulela u tola ndeme na vhungoho ha mafhungo a CGS ane a shumiswa nga Bodo, zwitatamennde zwa masheleni zwo bviswaho nga Vha CGS na mishumo kha tshimiswa. i kwhathisedza uri khohakhombo dzine dza nga vha hone dzi topolwa hu na tshifhinga nahone hu na maga a kuvhusele o teaho a re hone u itela u fhungudza khohakhombo idzi. Kuvhumbelwe na u dzhenelela mitangano ha Komiti ya Khohakhombo ya Vhuṭolamuvhalelano u bva nga la 1 Lambamai 2020 u swika 31 Thafamuhwe 2021 zwo sumbedziswa kha Thebulu ire afho fhasi:

Thebulu ya 8. Mitangano ya Komiti ya Khohakhombo na Vhuṭolamuvhalelano

Miraḡo ya komiti	2020/21					Mitangano yo dzhenelwaho
	17 Fulwana	19 Thangule	25 Khubvumedzi	21 Tshimedzi	19 Phando	
Vho K Maroga (Mudzulatshidzulo)	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5
Vho D Morabe	Vha hone	Pfarelo	Vha hone	Vha hone	Pfarelo	3
Vho O Willcox	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5
Dokotela Vho T Khumalo	Vha hone	Vha hone	Pfarelo	Vha hone	Vha hone	4
Adv N Maake	Vha hone	Vha hone	Vha hone	Vha hone	Pfarelo	4
Vho A Chowan	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5
Vho S Mngadi	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5
Vho S Xulu	Vha hone	Vha hone	Vha hone	Pfarelo	Pfarelo	3
Vho M Seane	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5

2.8.1.1 Muvhigo wa Komiti ya khohakhombo na Vhuṭolamuvhalelano

Mivhigo ya Komiti ya khohakhombo na Vhuṭolamuvhalelano ye ya dzudzanywa hu na vhuifhinduleli vhu bvaho kha Khethekanyo ya 77 ya PFMA na Ndaulo ya Vhufaragwama ha Lushaka ya 27.1. Komiti i dovha ya uri yo dzhia Thendelonzwiwa ya Komiti ya khohakhombo na Vhuṭolamuvhalelano sa maga ayo o teaho na ndaedzi dza kushumele, yo tshimbidza mishumo yayo u ya nga ha thendelonzwiwa iyi na u shuma mishumo yayo na vhuifhinduleli vhu re afha nga ngomu.

Kha u shuma mishumo yayo, komiti yo shuma mishumo i tevhelaho na miwe:

2.9 U ELA NA NDANGO DZA NGA NGOMU

Komiti yo laedza, u tola na u ela nyito dza mishumo ya Vhuṭolamuvhalelano ha nga Ngomu. Nga kha mushumo wa Vhuṭolamuvhalelano wa nga Ngomu, komiti yo dzulela u tola u shuma ha ndango dza nga ngomu na u ela u vhone arali mushumo wa Vhuṭolamuvhalelano ha nga ngomu ho khunyeledzwa. Musi wa 2020/21, ndango dza nga ngomu dzo vhwigwa uri dzo khwinisea vhukuma, na u tevhedza mbekanyamaitete dzo randelwaho u na

u vhogiwa uri dzi a fusha. Naho zwo ralo, hu na hune vha nga khwinisa hone:

- Thengo
- Ndangulo ya Ndaka
- Tshumelo ya Tsireledzo
- Mafhungo a Kushumele
- Thekhinołodzhi ya Mafhungo
- Vhuađa, Tshandanguvthoni na Mikhwa
- Mutakalo, Tsireledzo na Vhupo

Komiti i vhiga uri maga a u lulamisa o shumiswa u tandulula mawanwa othe a vhuđudzeđudze ha ndango dza nga ngomu.

2.10 U ELWA HA MUVHIGO WA NWAHA NGA NWAHA

Komiti yo:

- Sedzulusa muvhigo wa CGS kha mafhungo a kushumele kwo teaho;
- Sedzulusa mbekanyamaitete dza muvhalelano dza vha CGS na nyito;
- Sedzulusa vhukoni na u shuma ha mafhungo a masheleni o nekedzwaho kha Muđolamuvhalelano Muhulu;
- Ela, sedzulusa na u amba nga ha Muđolamuvhalelano Muhulu na Zwitatamennde zwa Masheleni zwa nwaaha nga nwaaha zwi re kha muvhigo wa nwaaha nga nwaaha;
- Sedzulusa ndangulo ya Muđolamuvhalelano muhulu na mivhigo wa Muđolamuvhalelano' na
- Ho sedzwa mafhungo aya o nekedzwaho komiti yo dzhiela ntha na u khunyeledza uri Zwitatamennde zwa Masheleni zwa Nwaaha nga nwaaha zwi elana ana thodea dza PFMA, na Ndaulo dza Vhufaragwama ha Lushaka na Maga a Afrika Tshipembe ane a Dzulela u Dzhielwa Ntha a Nyito dza Muvhalelano (Maga a SA na).

2.11 NDANGULO YA KHOHAKHOMBO

Komiti ya Khohakhombo musu wa nwaaha une wa khou sedzulusa yo themendela Redzhisita ta Khohakhombo ya Tshirathedzhi, Redzhisita ya Khohakhombo, Mbekanyamaitete ya u lwa na Vhuađa na Tshandanguvthoni kathihi na Mbekanyamaitete ya Vhubindudzi, Khohakhombo na u Tevhedza, ye ya do divhadzwa vhashumi na u dzheniswa kha mvelele ya vha CGS. Komiti yo sedzulusa:

- Dzangalelo la tshiimiswa kha khohakhombo na levele dza u kondelela, na
- U tanea hu hulwane kha khohakhombo dza masheleni, zwo livhanaho na vha ndangulo u itela u wana na u bveledza zwiirathedzhi zwa u fhungudza u vha kha u khomboni uho, hu tshi katelwa tshiimo, kushumele, vhuađa, tshirathedzhi, thekhinołodzhi ya mafhungo na sisiteme dza vhudavhidzani, kathihi ha mvusuludzo musu wa zwiwo na khohakhombo i bveleaho phanda.

2.12 U ELWA HA ZWITATAMENNDE ZWA MASHELENI

Komiti yo sedzulusa na u amba nga ha zwitatennde zwa masheleni zwa Muđolamuvhalelano Muhulwane wa CGS kha nwaaha wo fhelaho nga la 31 Thafamuhwe 2021. Komiti yo dovha ya sedzulusa luwalo lwa ndangulo lwa Muđolamuvhalelano na phindulo dzalwo. Komiti i na kuhumbulele kwa uri zwitatennde zwa masheleni zwi a elana, nga ndila dzothe, na thodea dza PFMA na Maga a SA a GRAP.

2.13 MUVHIGO WA MUĐOLAMUVHALENAO

Komiti ya zwa Vhuđolamuvhalelano na Khohakhombo i pfa yo takala u nekedza muvhigo wa nwaaha ya muvhalelano wo fhelaho nga 31 Thafamuhwe 2021.

Komiti yo sedzulusa pulane ya tshumiso ya u tola ya phanda ha nwaaha wa muvhalelano na mivhigo ire ya ndeme na uri mawanwa a ndeme o tandululwa. Komiti i do khwathisedza uri ndangulo i tandulula mawanwa othe a Vhuđolamuvhalelano a khou bvela phanda. komiti i tendelana na u tangananedza khunyeledzo ya Muđolamuvhalelano Muhulwane kha zwitatennde zwa masheleni nahone i vhone u nga Zwitatennde zwo Tolwaho zwa Masheleni zwa Nwaaha nga Nwaaha zwi tea u vhalwa na u tangananedzwa zwothe na muvhigo wa Muđolamuvhalelano Muhulwane.



Vho KM Maroga
Mudzulatshidulo
Komiti ya Vhuđolamuvhalelano na khohakhombo
31 Fulwana 2021

2.14 VHUÐIFHINDULELI HA KOMITI YA ZWA MASHELENI

Komiti ya zwa Masheleni ya CGS yo newa ndaela ya u dzhiela nṭha na u themendela u themedelwa ha Bodo kha mafhungo a tevhelaho:

- Mishumo mihulwane ya zwa masheleni;
- Tshiimo tsha u swikelela na tsha masheleni tsha vha CGS;
- Kha vha fhedze zwikolodo zwavho zwivhi;
- Phambano i fareaho kha u themedelwa ha migaganyagwama ya ṅwaha nga ṅwaha maelana na Pulane ya Muhanga wa U farea na Ndeme;

- Pfuma yo dzinginywaho na mugaganyagwama wa u shuma wa pfuma na zwibviswa;
- Zwitatamennde zwa masheleni na muvhigo wa ṅwaha nga ṅwaha;
- Mbekanyamaitele dzi re masiandaitwa a masheleni; na
- Ndangulo ya mafhungo a kushumele kwa bindu ho sedzwa mugaganyagwama wo tendelwaho.

Komiti ya zwa Masheleni mirado ya rathi ine ya si vha ya ekizekithivi yo nekzedzwa kha Thebulu ire afha fhasi, hu na u dzhenelela mutangano u bva 1 Lambamai 2020 u swika 31 Thafamuhwe 2021

Thebulu ya 9. Mitangano ya Komiti ya Masheleni

Mirado ya komiti	2020/21						Mitangano yo Dzhenelewaho
	2 Fulwi	17 Fulwana	19 Thangule	25 Khubvumedzi	21 Tshimedzi	19 Phando	
Vho P Nel (Chairperson)	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	6
Vho S Mokoena	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Pfarelo	5
Vho A Chowan	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	6
Vho D Morabe	Vha hone	Vha hone	Pfarelo	Vha hone	Vha hone	Pfarelo	4
Dokotela Vho J Mahachi	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	6
Adv N Maake	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Pfarelo	5
Vho M Mabuza	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	6
Vho O Willcox	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	6

2.15 KOMITI YA THEKHINIKHALA

Komiti ya Thekhinikhala ya vha CGS i na vhuḍifhindleli ha u dzhiela nṭha na u themendela u tendelwa ha Bodo ha mbekanyamushumo ya zwa saints i na tshirathedzhi ya tshimiswa, u ela zwibveledzwa zwa thekhinikhala na u lavhelesa vhuṭolamuvhalelano ha thekhinikhala ha ṅwaha nga ṅwaha.

Kuvhumbelwe na u dzhenelela mitangano ya Komiti ya Thekhinikhala u bva 1 Lambamai 2020 u swika 31 Thafamuhwe 2021 yo sumbedziswa kha Thebulu ire afho fhasi.

Thebulu ya 10. Mitangano ya Komiti ya thekhinikhala

Mirado ya komiti	2020/21					Mitangano yo dzhenelewaho
	2 Fulwi	16 Fulwana	18 Thangule	19 Tshimedzi	18 Phando	
Vho B Gerrits (Mudzulatshidulo)	Vha hone	Vha hone	Vha hone	Vha hone	Apology	4
Vho X Mvinjelwa	Apology	Vha hone	Vha hone	Vha hone	Vha hone	4
Dokotela Vho M Mayekiso	Present	Vha hone	Vha hone	Vha hone	Vha hone	5
Dokotela Vho J Mahachi	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5
Vho S Malaza	Vha hone	Pfarelo	Vha hone	Vha hone	Pfarelo	3
Vho S Mngadi	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5
Vho S Mokoena	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5
Vho M Mabuza	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5

2.16 KOMITI YA VHASHUMI, MBADELO NA TSHANDUKO

Komiti ya Vhashumi, Mbadelo na Vhashumi yo newa ndaela ya u dzhiela n̄tha na u themendela u mbekanyamaitela na zwiṭirathedzhi zwa Bodo zwa u themendela zwiko zwa vhathu zwa vha CGS, tshiedziswa tsha mbadelo tsha dzangano, mbadelo dza vhulanguli vhuhulwane na u engedzwa ha miholo ya ṅwaha nga ṅwaha. i dovha ya ela na u ita themendelo kha zwa

kushumele kwa mbadelo, bonsai na u dzhiela n̄tha mivhigo ya kushumele kha zwi elanaho na mishumo, ndinganyiso ya vhashumi, vhugudisi ha vhashumi na mafhungo a mveledziso.

Kuvhumbelwe na u dzhenelela muṭangano na Mbadelo dza Vhashumi na Komiti dza Tshanduko u bva nga ṅa 1 Lambamai 2020 u swika nga ṅa 31 Ṱhafamuhwe 2021 zwo sumbedziswa kha thebulu ire afho fhasi.

Thebulu ya 11. Miṭangano ya Komiti ya Vhashumi, Mbadelo na Vhashumi

Miraḡo ya komiti	2020/21					Miṭangano yo dzhenelwaho
	2 Fulwi	16 Fulwana	18 Ṱhangule	20 Tshimedzi	18 Phando	
Vho R Mdubeki (Mudzulatshidulo)	Vha hone	Vha hone	Vha hone	Pfarelo	Vha hone	4
Dokotela J Mirembe	-	-	-	Vha hone	Vha hone	2/2
Vho S Malie	-	-	-	Pfarelo	Vha hone	1/2
Vho M Seane	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5
Vho X Mvinjelwa	Apology	Vha hone	Vha hone	Vha hone	Vha hone	4
Dokotela M Mayekiso	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5
Vho M Mabuza	Vha hone	Vha hone	Vha hone	Vha hone	Vha hone	5

3. NDANGULO YA KHOHAKHOMBO

Vha Bodo ya GCS vha na vhuḍifhinduleli ha u thoma ndangulo ya khohakhombo nga kha vhurangaphanda vhu shumaho. Vha ndangulo vha na vhuḍifhinduleli kha Bodo u itela thanganelo ya ndangulo ya khombo kha kushumele kwa ḍuvha na ḍuvha kwa vha CGS na u shumisa na u ṭola maitele a ndangulo ya khohakhombo. Komiti ya zwa Vhuṭolamuvhalelano na Khohakhombo ndi komiti yo ḍiimisaho ine ya vha na vhuḍifhinduleli ha u lavhelesa u vha khomboni hu elanaho na kuvhusele na ndangulo ya khohakhombo

ya vha CGS. Vha CGS vha bveledza redzhisita ya tshiṭirathedzhi tsha khohakhombo ṅwaha nga ṅwaha ho sedzwa tshiṭirathedzhi tsha tshiimiswa, tshine tsha lavheleswa kotara iṅwe na iṅwe tshine tsha ṅekedza kwhaṭhisedzo kha Bodo ya uri vha CGS vha khou langa zwavhuḍi khohakhombo yo topolwaho. Khohakhombo ya kushumele i langiwa nga kha redzhisita dza kushumele na redzhisita ya khohakhombo ya GTP.

Tshivhumbeo tsha ndangulo ya khohakhombo tsha kuvhusele kwa dzangano kwa vha CGS tsho sumbedziswa kha tshifanyiso tshi re afho fhasi.



Tshifanyiso tsha fumbilimalo. Tshivhumbeo tsha ndangulo ya khohakhombo tsha kuvhusele kwa dzangano tsha vha CGS

4. NDANGO DZA NGA NGOMU

Ndangulo i na vhuḍifhinduleli ha u ola, u shumisa na u dzulela u sedzulusa ndango dza nga ngomu u itela u ṅekedza kwhaṭhisedzo na kushumele na u pfadza ha kushumele na u fulufhedzea ha kuvhigele kwa masheleni, na u linda na u londota vhuḍifhinduleli ha ndaka ya dzangano. Ndango idzi dzi ṭolwa na u langwa misi yoṭhe nga vha CGS nga ndangulo na vhashumi, hu na khethekanyo yo teaho ya mishumo.

Vhuṭolamuvhalelano ha nga ngomu vhu shuma zwa tsedzuluso dza nga ngomu, ndingano na kushumele kwa ndango idzi sa tshipiḍa tsha pulane ya vhuṭolamuvhalelano ha nga ngomu ha ṅwaha nga ṅwaha ha nga ngomu, na mivhigo ya nga ngomu ya vhuṭolamuvhalelano ine ya ṅekedzwa kha Komiti ya Vhuṭolamuvhalelano ha Khohakhombo.

5. VHUṬOLAMUVHALELANO HA NGA NGOMU

Mushumo wa vhuṭolamuvhalelano ha nga ngomu wo thomiwa u ya nga PFMA na u ita Vhuṭolamuvhalelano ho ḡisendekaho nga khohakhombo hu elanaho na Maga a nga Ngomu u itela Kushumele kwa phurofeshinala kwa Vhuṭolamuvhalelano nga ngomu. Thendelonzwiwa ya Vhuṭolamuvhalelano yo sedzuluswa nga Komiti ya Khohakhombo ya Vhuṭolamuvhalelano.

Pulane ya vhuṭolamuvhalelano ha nga ngomu yotendelwa nga Komiti ya Khohakhombo ya Vhuṭolamuvhalelano na mivhigo ya nga ngomu ya vhuṭolamuvhalelano yo ṅekedzwa Kha komiti kotara iṅwe na iṅwe. U sala murahu ha zwa vhuṭolamuvhalelano ho itwa phanḡa ha mawanwa a vhuṭolamuvhalelano a ṅwaha. Ho dovha ha itwa zwa Vhuṭolamuvhalelano ha nga Ngomu na tzedzuluso thangeli dza itwa kha zwithu zwo vhwigwaho kha luṅingo lwa vhusevhi na asainimenthe dzine dza ṭoḡea dzo itwa musi vha ndangulo vha tshi dzi ṭoḡa.

6. U TEVHEDZA MULAYO NA NDAULO

Vha CGS vha tevhedza Ndaulo dza Vhufaragwama ha Lushaka nga kha mutevhe wa tzedzuluso wa PFMA na khaḡenda, zwine zwa dzula zwi khou lavheleswa na u khwiniswa. U tevhedza milayo na ndaulo zwi a ṭolwa

nga kha nyito dza Komiti ya Vhuṭolamuvhalelano na khohakhombo na nga Yuniti ya Khohakhombo na u Tevhedza kha ḡevele ya kushumele, zwo ḡisendeka nga ḡifhasi ḡa ndaulo u itela vha CGS.

7. VHUḂAḡA NA TSHANDANGUVHONI

Vha CGS vha na vhuḡifhinduleli ha mulayo u ya nga ha PFMA ha u dzhia maga a u thivhela zwibviswa zwi songo tendelwa, zwi songo dzudzana, zwa u tambisa masheleni na ndozwo u bva kha vhuḡifari ha vhugevhenga. Mbekanyamaitele ya u lwa na vhuḂaḡa na tshandanguvhoni yo sedzuluswa na u tendelwa nga Phando 2021, nahone zwileludzi zwa vhusevhi zwa vusuludzwa.

Mushumo uyu u tshimbidzwa nga vha Deloitte. Mivhigo i bviswa ṅwedzi nga ṅwedzi na vhuḡifari ha vhuḂaḡa vhu a sedzuluswa nga vhuṭolamuvhalelano vha nga ngomu na u vhwigwa kha Komiti ya Vhuṭolamuvhalelano na Khohakhombo.

8. U FHUNGUDZA KHUḡANO YA MADZANGALELO

Vhaṅetshedzatshumelo dza thundu na tshumelo vha CGS vha tea u ḡadza ḡiṅwalwa ḡo tiwaho ḡa Vhufaragwama ha Lushaka (SBD4 Mulevho wa Dzangalelo). Ho sedzwa khonadzeo ya mavharivhari na tshidivhano, arali muṭaṭisano kana muṅwe ngae, a nga ṅekedzwa a vha e muthu o tholwaho nga vha CGS, kana muthu ane a vha na vhuṭumani navho,

hu ṭoḡiwa uri a bvisela khagala tshiimo tshawe kha vhulanguli ha u haṭula.

Nṅhani ha izwo, vhashumi vha CGS vho dzhenelelaho kha U ela Bodo na Komiti Khaṭhuli vha tea u ḡadza mulevho wa u sa bvisela khagala kha muṭangano muṅwe na muṅwe.

9. KHOUDU YA VHUDIFARI

Mirado yothe ya CGS i tevhedza Khoudu ya Vhudifari. Vha CGS vho dikumedzela u vha na vhubindudzi vhu re na mikhwa na u bveledza mvelele ya vhubindudzi ine ya si khethe sekithara, u vha vha vhudifhinduleli ha matshiliso na vhupo. i ita izwo nga u tevhedza zwithu zwa ndeme zwi tevhelaho na milayo:

- U sa dzhia sia na tshirunzi kha vhubindudzi hothe, hu tshi katelwa u farwa lwa mikhwa ha khudano dza madzangalelo dzine dza nga vha hone vhuwati ha vushaka ha phurofeshinala.
- U thonifha pfanelo dza vhatu na tshirunzi tsha vashumi vhothe: U tangedza mvelele, vhurerele, mbeu, murafho na tshiimo tsha vhudzekani zwo fhambanaho;

- U fulufhedzea, u vha khagala, vhudifhinduleli na
- U tevhedza maga a pfadzaho a kuvhusele kwa bindu na milayo.

U ya nga ha Khoudu ya Mikhwa na Vhudifari, vhatu vhothe vho imelelaho vha CGS vha tea u tevhedza maga a nthesa a vhubindudzi na tshirunzi. Zwiwe hafhu, vashumi vhothe, vhorakhonhiraka, makone na vha we vhane vha imelela tshiimiswa vha tea u imelela tshiimiswa zwavhudi na nga u fulufhedzea na u sa dzhena kha nyito inwe na inwe kana tshikimu tshi to daho u fhura vhatu tselede, ndaka kana tshumelo. Tshirunzi tsha vha CGS ndi tsha ndeme kha vhuconi ha u shuma sa tshiimiswa tsha muvhuso tshi pfadzaho.

10. BODO YA VHAÑWALELI

Muñwaleli wa Bodo u nekeda tshumelo ya ngeletshedzo kha Bodo na u divhadza mirado ya Bodo nga ha tshanduko dza ndaulo na mveledziso ntswa kha kuvhusele kwa bindu. Zwiwe hafhu, Muñwaleli wa Bodo u endedza Bodo na komiti ya

Bodo nga ha uri vha shuma hani vhudifhinduleli havho nga madzangalelo avho othe na a tshiimiswa. Muñwaleli wa Bodo u tshimbidza na u dzhenelela kha Bodo na mitangano ya Bodo, na u vhuwe ha mañwalwa a elanaho a mbekanyamaitete.

11. KHWAṬHISEDZO YA NDEME

U dzhielwa ntha sa tshileludzi tsha maimo a ntha, vha CGS zwa zwino vha khou lugisa akhiredithesheni ya ISO 17025 u itela laborathori yavho. Heyi ndi thandela ya ndeme ngauri laborathori yo akhiredithiwaho i na vhubindudzi vhunzhi, na mutakalo na mbuelo dza tsireledzo. Vharengi vha elanaho na laborathori hu na ndeme, vhuronwane, u disendeka na u shuma, zwine zwa fhedzisela zwo livhisa kha u fushea ha vharengi na u engedzea ha ndinganyiso ya pfungavhuwe.

Fhedzi, laborathori ine ya khou tea u akhiredithiwa, ngona dza ndingo dzi tea u khwaṭhisedzwa kha muñwala wo imaho ngauri u langiwaho na thempheretsha. Zwenezwo, u fhisa, mufhe na sisiteme ya u vusuludza muya ndi thodea ya akhiredithesheni ya ISO 17025. Sisiteme iyi i tea u thomiwa mafheloni a nwa wa khalenda, hune nga murahu ha maitete a mufhe ha do thoma zwithu nga vhudalo. Thanziela ya ISO 9001 i ndilani.

12. MUTAKALO, TSIRELEDZO NA VHUPO

Sa tshipida tsha u khwinisa hu sa gumi ha u nekedza na u londota vhupe ha mushumo ho tsireledzeaho hu re mutakalo kha vhothe, ndangulo yo dzhenelela kha vhuṭolamuvhalelano ha u tevhedza ha jifhasi ho sedzwa Mulayo wa Mutakalo mushumoni na Vhutsireledzi, wa Vhu 85 wa 1993 na Ndaulo, na Ndagulo ya Vhupe ya Lushaka: Mulayo wa Malaṭwa, 2008 (wa Vhu 59 ya 2008): Ndaulo ya Mbekanywa ya Malaṭwa. Vhuṭolamuvhalelano ho bvelelaho. Vhuṭolamuvhalelano ho bveledzwa mutevhe wa tzedzuluso wa kushumele, mutakalo na tsireledzo, zwine zwa vha vha adzhenda yo imaho kha miṭangano Komiti ya Vhuṭolamuvhalelano na Khohakhombo ya Bodo. Musi wa ṅwaha une wa khou sedzuluswa, maelana na akhiredithesheni ya ISO 17025:2017 na ṭhanziela ya ISO 9001:2015 na madzangalelo ayo, tshiimiswa tsho kwhaṭhisedza uri vhashumi:

- U tevhedza mbekanyamaitele dza SHEQ na maitele, hu tshi katelwa na mbekanyamaitele ya COVID-19;
- U thola vhaimeleli vha tsireledzo, mutakalo na vhaimeleli vha vhupe;
- U shumisa zwiambaro zwa tsireledzo na zwishumiswa sa zwe zwa themendelwa;
- Ela na u vhiga khohakhombo;
- U dzhenela vhugudisi na u thoma u shumiswa mushumoni;
- U vhiga zwiwo zwi bveledzwaho kana zwe zwa vha zwi tshi nga bveledza mafuvhalo na tshinyalelo;

- U thusa kha tzedzuluso ya zwiwo hu na tshipikwa tsha u divhadza maga a u thivhela;
- U vhiga maga a songo vhulungea na u shuma hu na tshumisano u itela u khwinisa maga a mutakalo na tsireledzo na kushumele, na
- U shuma vho tsireledzea misi yothe.

Vha thimu ya CGS vha ṭola nga vhusedzi masia othe a ndondolo ya mutakalo mushumoni:

- Mbekanyamushumo ya tzedzuluso ya dzilafho (hu tshi laṭelwa u dzhena, tshikhala, u bva, dzilafho la ekizekethivi)
- Ndingo dza tzedzuluso dza dzilafho (hu tshi katelwa adiomenthiri, sipiomenthiri na u ṭola ha baiṭodzhikhala);
- Mafuvhalo mushumoni, na
- Zwi sa elani na mutakalo mushumoni (ndondolo ya mutakalo, tsenguluso dza mutakalo nz).

Ndagulo yavhudi ya malaṭwa ndi ya ndeme u tsireledza vhupe na u kwhaṭhisedza mutakalo na tsireledzo ya vhashumi na tshitshavha. Maṅwe malaṭwa a nga vha khombo na u tshikafhadza vhupe. Nyito dza ndangulo ya malaṭwa mmbi na dzone dzi nga vhanga tshikafhadzo ya mavu na muya zwine zwa nga vhanga nyimele dza dzilafho dzi shushaho kha vhathu na phukha. U swika zwino, musu wa ṅwaha une wa khou sedzuluswa, vha CGS vho divhadza thandela ya ndangulo ya malaṭwa u nekedza vhupe ha u shumela ho kunaho kha vhashumi.

13. MBEKANYAMUSHUMO YA MBAMBADZO, VHUDAVHIDZANI NA NDANGULO YA VHASHUMISANI

U FHAṬA PFUNGAVHUNE YA VHA CGS

Musi wa 2020/21, vha CGS vho tshimbidza nyito dza u divhadza pfungavhune vhukati ha vhashumisani navho. hezwi zwo katela zwiwo, mabembela, u kwama vhashumisani, u dzhenelela kha khoniferentsi, vhushaka ha midia na u thoma na londota tshumisano ya tshithathedzho.

Mavhala a nngwe a u fhaṭa pfungavhune o katelwaho:

- Athikili ya zwa migodi ya vhege nga vhege i sumbedzaho mishumo ya nzudzanyo dza u engedza u kunga ha tzedzuluso dza Afrika Tshipembe.
- Khanḡiso ya midia kha mafhungo a Vhuinzhiniara & zwa Migodi zwa Vhege nga

Vhege kha u dzhenelela hu rengiwaho phanda nga thodisiso ya u vhea Nḡowetshumo ya malasha ya Afrika Tshipembe sa tshipiḡa tsha ndeme tsha Vhuthomi ha Just Transition u itela u tendela ikonomi ya khaboni.

- Athikili ya kha Cape Times nga ha Mbekanyamushumo ya KDD na kutshimbilele kwayo.
- Khunguwedzo kha zwa Tsedzuluso ya Migodi zwi tshimbizaho ikonomi ya khaboni ya fhasi.
- Khunguwedzo kha Vharangaphanda vha Migodi kha u sa nyetha ha vhupo.
- Athikili kha City Press nga ha tsedzuluso dza gese ya tshileithi.
- Athikili kha Independent Online nga ha mudzinginyi wa Cape Town, we wa vha u sa elani na mudzinginyo wa kha phendelashango.
- Khunguwedzo dza fumbili ina kha midia dza kale dza thengiso na dzo ḡowealeho.
- Mafhungo a dzheniswaho nga tshifhinga nga mveledziso dza tshiimiswa na vhubvedzi ha u dzhenelela ha vhashumisani, mabembela, zwiwo na mafhungo a saintsi dza vhupo, zwe zwa dzhenelela kha nyaluwo i ongolowaho ya vhatevheli kha pulatifomo dza midia dza CGS sa Facebook, Twitter na LinkedIn.

Inthaviwu dza midia:

- Vha CGS vho wana vhukateli ha midia musi wa inthaviwu nga Vho Cathy Mohlahlana wa SAFM musi hu khou lugiselwa mbekanyamushumo ya KDD.
- Pulatifomo dzo vhalaho dza midia dzo katela u thomiwa ha mbekanyamushumo ya KDD. CEO o itiwa inthaviwu kha Radio 702 nga John Perlman, kha tshanele ya mafhungo a SABC nga Vho Nzinga Qunta na kha Newzroom Afrika nga Vho Thabo Mduli.
- Vho Thulasizwe Simelane vha eNCA vho ita inthaviwu CEO nga murahu ha u rwelwaḡari ha mbekanyamushumo ya KDD.
- Inthaviwu yo itwa kha Newzroom Afrika nga ha mudzinginyo wa Cape Town.
- Inthaviwu yo itwa kha Radio Islam ho sedzwa mudzinginyo wa Cape Town.

Nḡhani ha izwo vha CGS Ovho fhindula kha u shumiswa kha khandiso ya ndeme na kha mbudziso dza midia nga ha mudzinginyo musi u tshi itea.

Mabembela na mishumo:

Mabembela a ndeme na zwiwo zwa ḡwaha:

- Bembela ḡa Nwedzi wa Vhaswa ḡa kha midia wa vhudavhidzani ḡa thero ya 'Vhaswa vha re kha zwa Saintsi ya vhupo' ḡo olwa u mona na Fulwana. ḡo sumbedzwa vhaswa vha CGS vho fhambanaho vha dzhenelelaho kha u fhaḡa tshiimiswa.
- Mbekanyamushumo ya KDD yo rwelwaḡari lwa tshiofisi kha mushumo wo farelwaho ngei Beaufort West, Western Cape nga vha CGS.
- Nga Khubvumedzi, ḡuvha ḡa Vhufa, Nwedzi wa Vhufa, wo pembelelwa kha ofisi dza CGS na kha midia ya vhudavhidzani, zwe zwa sumbedza matombo a dzhioḡodzhi na saithi dza vhufa ha zwa vhupo.
- Fentsi yo dzheniswaho u mona na ofisi khulwane ya CGS u ḡisa tshenzhelo ya 'Maḡuvha a 16 a u lwa na Khakhathi dza Vhafumakadzi na Vhana' na u tuḡuwedza vhashumi u vhiga u tambudzwa ha khakhathi kha vhulanguli.
- Ndumeliso dza khalaḡwaha nga mulaedza wa vidio yo bveledzwaho nga vhashumisani vha CGS. Mulaedza wo dovha a iswa kha pulatifomo ya vhudavhidzani ya CGS.
- Vha CGS vho fara Webinar ya kha lubuvhisia ya vhafumakadzi vha re kha saintsi dza vhupo, u sumbedza mazhakanḡila a vhafumakadzi vha re kha CGS na vhaambi vhahulwane vha amba mafhungo a ndeme.
- Vha CGS vho dzhenelela kha maguvhangano ya lubuvhisia ya Prospectors & Developers Association ya Canada, ine khayi CEO vho vha vhe tshipiḡa tsha therisano i tshimbizwaho nga Fasken nga kha mutevhe wa seminara dzayo dza ḡwaha dza DMRE. Seiminara yo kovhekanya mveledziso na zwikhala kha sekithara ya minerala Afrika Tshipembe.
- Bembela ḡa u rangela mushumo ḡo itwa kha midia wa vhudavhidzani u anḡadza maguvhangano ya CGS, mushumo muhulwane une wa kovhekana mushumo wa tshiimiswa tsha ḡekedza luvhonela kha thandela dza hone, na sedza ḡowelo na thekhinoḡodzhi dzi shumiswaho kha sia ḡa saintsi ya vhupo.
- ḡuvha ḡa mutakalo ḡo itea u tuḡuwedza vhashumi na u bveledza vhupo vhu re na mutakalo ha u shumela.

Vhukwamani na vhashumisani:

Vha CGS vha a pfesesa uri, vha kone u ḡekedza vhuḡifhinduleli havho vha tea u davhidzana na vhashumisani nga u angaredza, hu tshi katelwa vhashumi, mihasho ha dzitshaka, ya lushaka, ya

vundu, masipala, vhulangi ha sialala, zwiimiswa zwa muvhuso, vhorabulasi, zwiimiswa zwa muvhuso na zwi si zwa muvhuso, vhoraakademi na zwiimiswa zwa phurofeshinala, khamphani dza phuraivethe na nnyi na nnyi.

Musi wa n̄waha u sedzuluswaho, vha CGS vho dzhia kuitele kwo t̄anganelanaho kwa u kwamana na vhashumisani, ku katelaho u p̄sesa, u dzudzanya na u langula ndavhelelo dza vhashumisani, zwine zwothe ndi zwa ndeme kha vhuḍifhinduleli ha bindu, kuvhusele kwavhuḍi na u vha khagala. Kushumele uku kwo sedza kha u fhaṭa vhushaka ho khwaṭhaho na vhushaka ha matshiliso na vhashumisani vha ndeme, nga maanḁa kha vhupo vhune ha tendela tshumiso yavhuḍi ya ndeme ya thandela dza CGS. Ndangulo ya ekizekethivi, ndangulo na zwa saintsii, thekhiikhala na vhashumi vha tikedzi vha tshiimiswa vho t̄anganedza kuitele uku u fana, zwine zwa khou thoma u aṅwa mitshelo kha tshumiso ya thandela.

Ho vha na vhwkhamani ho vhalaho ha vhashumisani vha ndeme u itela u bveledza tshumiso i leluwaho ya GTP, thandela dza vhubindudzi na zwiwo. Musi hu na masiandaitwa a matshiliso a elanaho na COVID-19, vha CGS vho iswa kha DMRE u rangaphanḁa mbekanyamushumo ya mvusuludzo ya ikonomi na mveledziso ya pulane ya tshumiso ya t̄sedzuluso. Thandela dzo vhalaho dzo vha dza ndeme u itela u livhana na khaedu dza ikonomi.

Thandela ya Limpopo Greenstone Belt

Vhurumelwa ha vha CGS ho rangwa phanḁa nga CEO ho vha na vhuṅwe vhwkhamani na vhashumisani vha ndeme kha masipala wapo wa Greater Giyani na Collins Chabane na vhaimeleli vhapo vha vhangaphanḁa ha sialala ha zwitshavha izwi zwothe. Zwitshavha kanzhi zwi dzhenelela nga nungo kha thandela dza CGS. Musi wa n̄waha, nahone zwi tshi elana na vhuḍikumedzeli ha CGS ha u fhaṭa vhwkoni ha zwitshavha zwine ya shuma khazwo, vhashumi vhapo vha 13 vho tholwa nga u sielisana u thusa Thimu dza dzhiofisikisi, dzhiokhemisiṭiri na haiḁirodzhioḁodzhi. Thandela i t̄oḁa u bvisela khagala khonadzeo ya u ita minerala na ya ikonomi ya zwi songo dzulisea na u ela khonadzeo ya u wana ndeme ine ya nga vha hone ya maḁiṭhavhela.

Ngudo ya Maḁiṭhavhela ya Maluti-a-Phofung

Vha CGS vho t̄angana na Khosi ya Bakoena, Morena Moremoholo Mopeli, ngei QwaQwa, Free State. Ha tevhela muhwe muṭanganano wo tshimbidzwaho nga

Khoro ya Vhuhosi ya Bokoena. Kha avho vhane vha khou dzhenelela ho vha hu MEC wa zwa Kuvhusele kwa Bindu na Mafhungo a Sialala, Masipala Wapo wa Maluti-a-Phofung, vhaimeleli vha Sedibeng Water na Muhasho wa Maḁi na Tshampungane wa Free State. Thandela iyi i livhana na khaedu dza matshiliso dza saintsii dza vhupo, nga maanḁa ndingo dza maḁiṭhavhela.

Mbekanyamushumo ya KDD

T̄hoḁea ya u dzhenelela ha tshitshavha kha Mbekanyamushumo ya KDD ho fushwa nga kha miṭanganano ya vhashumi yo farwa ngei Beaufort West. Vha thimu ya CGS na vhangaphanḁa vha Masipala wa Tshiṭiriki tsha Central Karoo na Masipala Wapo wa Beaufort West, vho ḁo kwamana na mirado ya tshitshavha. u bwa ho thoma nga Khubvumedzi 2020 na u fhela nga n̄waha ya muvhalelano, ho bvela phanḁa u swika kha vhungolo ha 2 000m.

Nzudzanyo dzo vhalaho dzo swikelelwa vhukati ha vhashumisani na CGS hu u itela u fhindula Muhanga wa Vhushaka ha Mivhuso na Tshiedziswa tsha Mveledziso ya Tshiṭiriki zwi khou rangwa phanḁa nga Ofisi ya Phuresidennde. Thandelano dzo katela:

- Zhendedzi ḁa Mveledziso ya Dzinḁu
- Zhendedzi ḁa Dzibada ḁa Lushaka ḁa Afrika Tshipembe SOC Ltd
- Zhendedzi ḁa Peṭiroliamu ḁa Afrika Tshipembe
- Masipala wa Tshiṭiriki wa UThukela
- ORGEM na Muhasho wa Zwiko zwa Minerala na Fulufulu (Afrika Tshipembe) na Muhasho wa Fulufulu na Migodi (Riphabuḁiki ya Afrika Vhwkati)

Vhuḍifhinduleli ha vhubindudzi na matshiliso:

- Masiki dza tshifhaṭuwo dzi re na pfungavhuṅe kha vhashumisani vha nga ho sa Masipala wa Beaufort West, Muhasho wa Mpumalanga wa Mveledziso ya Ikonomi na Vhuendelamashango, Khoro ya Vhuhosi ya AbaThembu, Khoro ya Sialala ya AmaZizi, Masipala wa Vhwkati wa Tshiṭiriki wa Karoo, Masiapala wa Tshiṭiriki wa Mopani na Masipala Wapo wa King Sabatha Dalindyebo.



Ho phaḁaladzwa thambo kha vhashumisani vho fhambanaho na kha pulatifomo dza zwa matshilisano u kungedzela maguvhangano ya vha CGS.

The CGS would like to invite you to its annual two day

CONFERENCE

4th-5th March 2021

Theme:
Geoscience: the fulcrum of human development

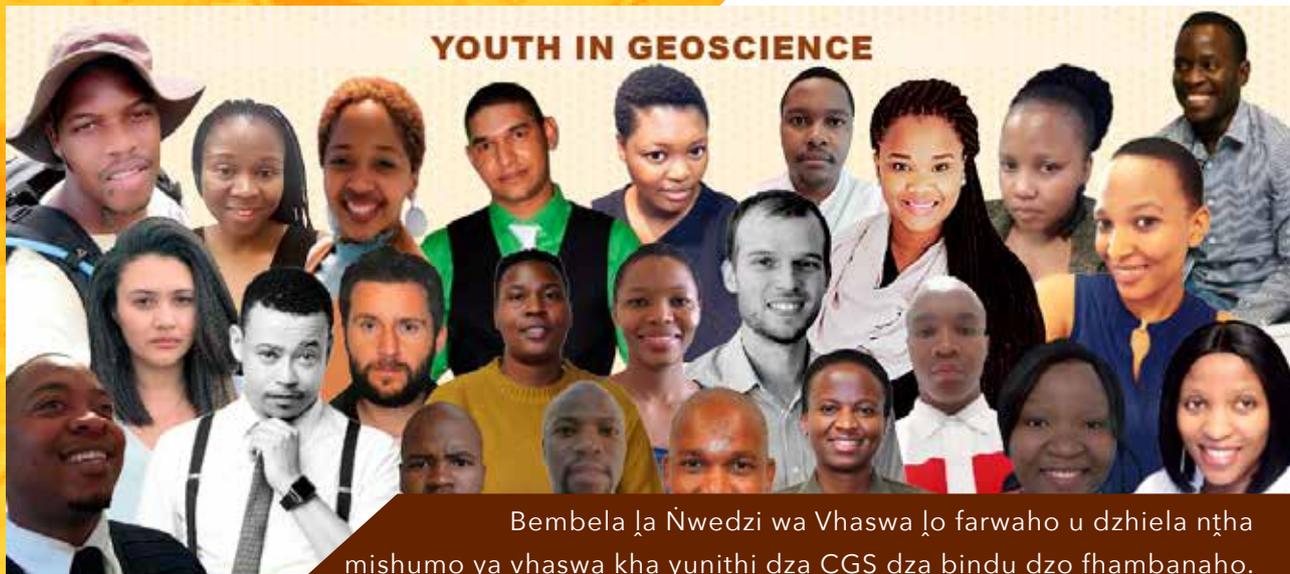
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Bembela ja Nwedzi wa Vhaswa lo farwaho u dzhiela nḁha mishumo ya vhaswa kha yunithi dza CGS dza bindu dzo fhambanaho.

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Vhukwamani na vhashumisani kha muḁangano vha vhashumisani vhanzhi kha ngudo dza maḁiḁhavhela dza Maluti-a-Phofung



A

a) Vhashumi CGS vha dzhenelelaho kha nyonyoloso musu wa dūvha la mutakalo ngei ofisini khulwane.



B

b) Vhashumi vha dīlugisela u tshimbila ya nyonyoloso ofisini dza dzingu dza Bellville.



Dokotela Vho Taufeeq Dhansay vha khou ita makumedzwa musu wa wekishopho ya CCUS ya thekhnikhala

Vhurumelwa ha CAR ho dalela laiburari khulwane ya lushaka u itela u guda nga ha tshikene tsha haiphasipekithirala na kushumiselwe kwatsho nga murahu ha u saina memorandamu wa tshumisano vhukati ha vha CGS na vha ORGEM



CEO Mosa Mabuza u dzhenelela kha therisano ya phanele ya PDAC musu wa seminara ya űwaha nga űwaha ya Fasken na vha DMRE

14. MAFHUNGO A U TEVHEDZA KUSHUMELE KWA BBBEE

Mafhungo a re afha fhasi o nekedzwa u itela u tevhedza thodea dza u nea maanda ha ikonomi ho tandavhuwaho kha vharema (BBBEE) dza Mulayo wa BBBEE wa 2013 wo randelwaho nga Muhasho wa Thengiso, Ndowetshumo na Mutatisano.

Thebulu ya 12. Mafhungo a u tevhedza kushumele kwa BBBEE

Muvhuso/tshiimiswa tsha nnyi na nnyi tshi shumisa khoutu ya vhudifari havhudi (Thanziela ya levele dza BBBEE dza 1 u swika 8) kha zwi tevhelaho:

Kuitele	Phindulo Ee/Hai	Nyambedzano (dzi katela nyambedzano dza nga ha phindulo dzavho na u sumbedza maga e vha a dzhia u itela u tevhedza)
U vhona kuitele kwa u tea u itela u bvisa laisentsi, mabindu kana dziñwe thendelo dza nyito ya ikonomi u ya nga ha mulayo muñwe na muñwe?	Hai	Arali hu Ee, vha hambela u dzhenisa Kuitele kwa U tea na muvhigo wa u tevhedza wa tshumiso wa hone kha Muvhigo wa Nwaha nga Nwaha.
U bvedza na u shumisa mbekanyamaitele ya thengo ya u tou funa?	Hai	Arali hu Ee, vha hambela u dzhenisa Mbekanyamaitele ya Thengo ya u tou Funa kathihi na muvhigo wa u tevhedza wa hone kha Muvhigo wa Nwaha nga Nwaha.
U vhona maitele a u tea u itela thengiso ya mabindu a muvhuso?	Hai	Arali hu Ee, vha hambela u dzhenisa Kuitele kwa u Tea kathihi na muvhigo wa u tevhedza wa tshumiso ya hone na Muvhigo wa Nwaha nga Nwaha
U bvedza maitele a u dzhena kha tshumisano na sekithara ya phuraivethe?	Hai	Arali hu Ee, vha hambela u dzhenisa Kuitele kwa u Tea kathihi na muvhigo wa u tevhedza wa tshumiso ya hone na Muvhigo wa Nwaha nga Nwaha
U vhona maitele a u nekedza pfufho, mphomali na zwikimu zwa u vhulunga zwi tikedzaho u nea maanda a ikonomi vharema nga u tandavhuwa havho?	Hai	Arali hu Ee, vha hambela u dzhenisa Kuitele kwa u Tea kathihi na muvhigo wa u tevhedza wa tshumiso ya hone na Muvhigo wa Nwaha nga Nwaha



Vhorasantsi vha Santsi dza vhupo vha khou shuma kha sikena tsha haiphasepekitherala kha Laiburari ya Lushaka Khulwane ya Donkerhoek

TSHIPIIDA TSHA D:

Mveledziso dza Zwiko zwa Vhathu

Khethekanyo iyi i nekedza fhethu ho sedzwaho kha muhasho wa Zwiko zwa vhathu u itela n'waha une wa khou sedzuluswa, hu tshi katela zwa vhugudisi na tshanduko.

I dovha ya katela:

- Sisiteme dza u ela kushumele u itela u ela kushumele;
- Ndangulo ya mutakalo wa vhashumi u khwaṭhisedza mutakalo wa vhashumi;
- Nyito dza ndeme dza zwiko zwa vhathu zwa n'waha;
- Khaedu dza vhukoni ha vhathu;
- Zwipikwa zwa zwiko zwa vhathu, na
- Mbalombalo zwa zwiko zwa vhathu.

Vha CGS vha dzhia vhashumi sa zwiko zwa ndeme zwa nḡisedzo ya vhuḡifhinduleli havho ha tshiṭirathedzhi. U swika zwino. Muhasho wa Zwiko wa Vhathu ndi mushumisani wa tshiṭirathedzhi ane mushumo wawe wa vha wa u khwaṭhisedza uri vha CGS vha kunga na dzudza zwiko zwo ṭoḡeaho na vhukoni ha u shuma ndaela dza theo ya mulayo ya zwipikwa zwa tshiṭirathedzhi.



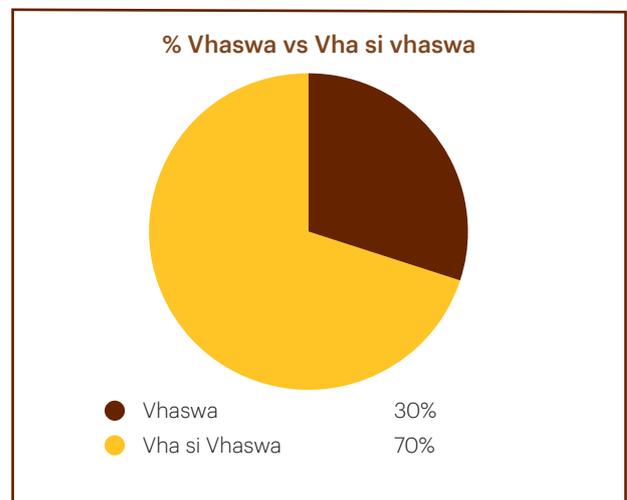
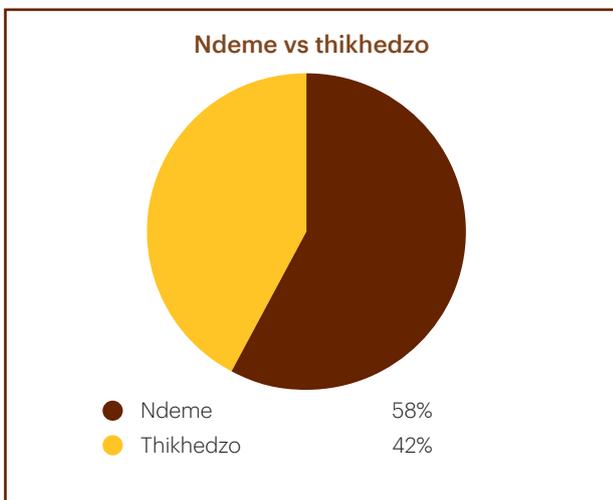
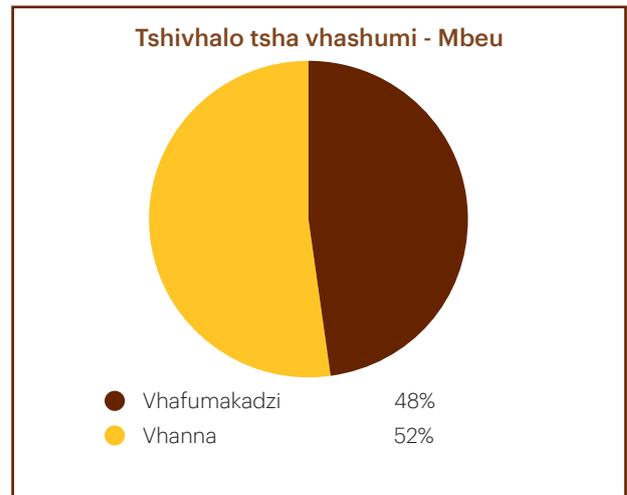
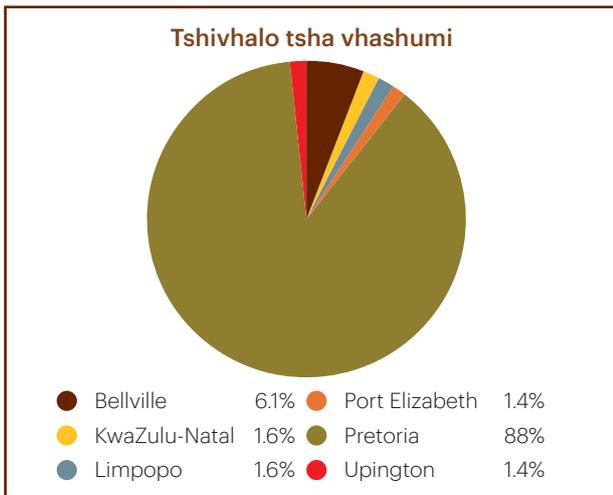
Gambani ya kule ngei kha phendelashango ya Namibia, devhula ha Luderitz, Namibia

1. MBONALONYANGAREDZI YA MAFHUNGO A ZWIKO ZWA VHATHU

1.1 NYIMELE YA VHASHUMI

Vha CGS vha d̄ihudza nga u vha na vhashumi vha 442 u mona na madzingu a rathi, 58% i kha mishumo ya ndeme (ya saintsi) 42% i kha mishumo ya thikhedzo, zwine zwa vha vhashumi vhavhili vha thikhedzo kha vhashumi vhararu vha ndeme/vha zwa saintsi.

Ndivhanele iyi i elana na dziñwe khoro dza saintsi. tshiimiswa tshi d̄idzhenisa vhukuma kha zwa u thola vhaswa na vhafumakadzi, hu na vhashumi vha 30% vha vhaswa na vhafumakadzi vhane vha vha 48% ya vhashumi, sa zwe zwa sumbedziswa kha Tshifanyiso tsha fumbiliṭahe afho fhasi.



Tshifanyiso tsha vhufumbiliṭahe. Kuvhumbelwe kwa vhashumi vha CGS

Dwazetshifu ḷa COVID-19 ḷo vha ndingo ya tshivhumbeo tsha vhashumi na tshiimiswa nga ndila i fanaho. Vha CGS phindulo yavho ya u thoma kha dwazetshifu ho vha u lwa nga nungo dzavho dzoṭhe u tsireledza mutakalo na tsireledzo ya vhashumi, u engedza vha pfukela na kha vhafunwa vhavho.

Komiti ya COVID-19 yo thomiwa, na u endedzwa nga vha Dzangano ḷa Mutakalo wa ḷifhasi na vhulanguli ha lushaka, ndangulo yo mbo d̄i shumisa phurothokholo dza mutakalo na tsireledzo nga u ṅekedza zwishumiswa zwa kule zwa thengiso, zwi thivhelaho tshivhalo tsha vhathu kha dzibodorumu, vha ombedzela zwa u vha kule na kule, na u ṅekedza sanithaiza na zwishumiswa zwa u d̄itsireledza u mona

na ofisi. Muñetshedzatshumelo wa zwa mutakalo o ðiswa u thusa vhashumi kha zwa mutakalo wa vhuðipfi na u dzula vho takala. U dzhenelela ho angalalaho ha zwa mutakalo ho itwa, hu tshi katelwa ngeletshedzo na tshumelo dza thikhedzo.

Tshiimiswa tshi ðo bvela phanða na u vula maço, na u ðhogomela zwa dwadzetshifu na u ðo i sa phanða u ita zwo lu swikaho ñwaha nga murahu ha dwadzetshifu. Dwadzetshifu, fhedzi, lo ðisa zwikhala zwiswa kha tshiimiswa uri tshiimiswa tshi kone u dzhenelela kha mvusuludzo ya ikononi ya shango nga u shumisana na vhatu vho fhambanaho.

1.2 ZWIKO ZWA VHATHU ZWA NDEME KHA UNO NWANA

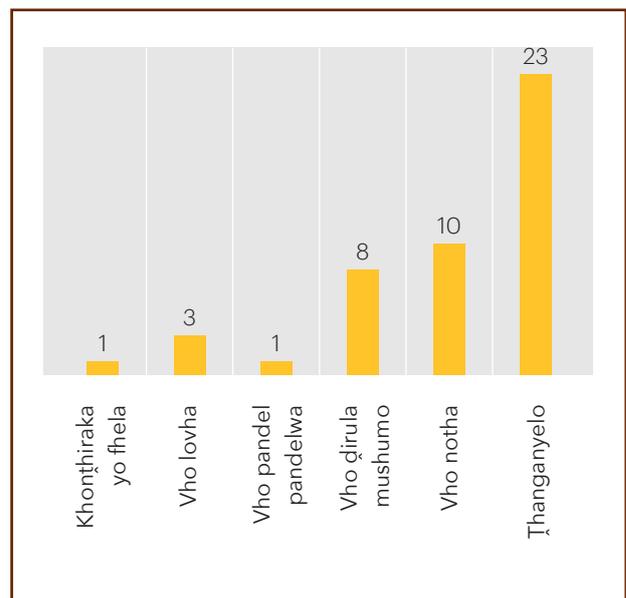
- Musivhuria vhutshithoma khakotaraya u thomaya ñwaha ya muvhalelano, hu lavhelelwa uri vhuñzhi ha vhashumi vha ðo farwa nga mukhushwane. Hu khou lavhelelwa izwi, ndangulo yo fara Ðuvha Lavhuði la Mutakalo kha kotara ya u thoma ya 2020/21. Mbekanyamushumo i katela mishumo ya u khwañhisa tshigwada, ndingo dza u tou funa u itela malwadze a nga ho sa HIV, mutsiko wa malofha na guñukhousu - ndi zwa ndeme naho hu na dwadzetshifu la COVID-19 - u ðhavhelwa mphigela.
- Vhashumi vha ndeme vho amba nga ha mbekanyamushumo ya mvusuludzo ya ikononi ya muvhuso na u lugisela tshumiso ya GTP.
- Sa fhethu ha ndeme ha muvhuso, vha CGS vha tea u tola vhashumi vhaswa. U sedza kha vhudavhidzani ha matshilisano zwo itwa nga vha ndangulo, mbambadzo na vhuimo ha vhudavhidzani.

1.3 ZWA NDEME ZWO SWIKELELWAHO

- Bembela la tshenzhelo lo rwelwañari u itela u tuñuwedza u bvisela khagala vhuholefali vhuñwe na vhuñwe. Bembela lo engedza tshivalo tsha vhashumi vha tshilaho na vhuholefali nga 0.6% u bva 1.7% u swika 2.3%. Vha ndangulo vha ðo bvela phanða na u tuñuwedza u bvisela khagala vhuholefali na u tikedza vha tshilaho na vhuholefali na u hanedza uri u vha vhuholefali a si u vha naho muvhili fhedzi.
- Vhashumi vha fumalo rathi vho ðiñwalisela bazari kha ñwaha wa akademi wa 2021, 53% yavho ndi vhafumakadzi (vha rathi kha vha malo ndi vha PHD). Hezwi zwi sumbedza vhuñdikumedzeli ha ndangulo kha u alusa vhashumi vhavho nga vhuñlunga kha mpho dzavho dza nga ngomu, nga maanða vhafumakadzi.

- Vhulanguli ha Ndalukanyo dza zwa Migodi ho avhela R720 000 ya u ñwalisa vhashumi vha CGS u itela Mbekanyamushumo ya Mveledziso ya Ndangulo. Vhatu vho no ði topolwa, hu tshi katelwa, vhaimeleli vha vhashumi vhane hafu yavho vha vha vhafumakadzi. Tshigwada tsho ðiñwalisa nga kha UNISA, ine ya ñekedza khoso dza digirii na Ndalukanyo dza Lushaka dzi elanaho dza Muhanga wa levele 7
- Bindu li kha tshumisano nahone lo thoma zwine mushumisani muñwe na muñwe wa zwiko zwa vhatu a ñeiwa yunithi ya bindu. Vhashumisani vha na ndivho khulwane ya yunithi ya bindu, vha dzhenelela miñanganano ya ñwaha nga ñwaha, u ñekedza tshumelo guñe kha bindu u khwañhisedza vhuñpulani, na u thusa mafhungo a vhuñshaka ha vhashumi vha re phanða, phurobesheni, ndangulo ya kushumele na mutakalo wa vhashumi, na zwiñwe.
- Vha CGS vha shuma sa Zhendedzi li shumisaho la thandela ya CCUS hu na u dzhenelela ha zwiimiswa zwoñthe na vhuñkwamani vhuñhulu na vhashumi vha kwameaho. Maelana na Khethekanyo ya 197 ya Mulayo wa Vhuñshaka ha zwa Vhashumi wa vhu 66 wa 1995, vhashumi vho iswaho kha CGS vho ñewa maga na milayo i fanaho ya khonñhiraka dzavho dza kale, hu tshi katelwa mbadelo. Thendelano yo sainiwa nga tshiimiswa, vha CGS na mushumi a topolwa u itela tshanduko i shumaho nahone ine ya sa remise ðhoho.

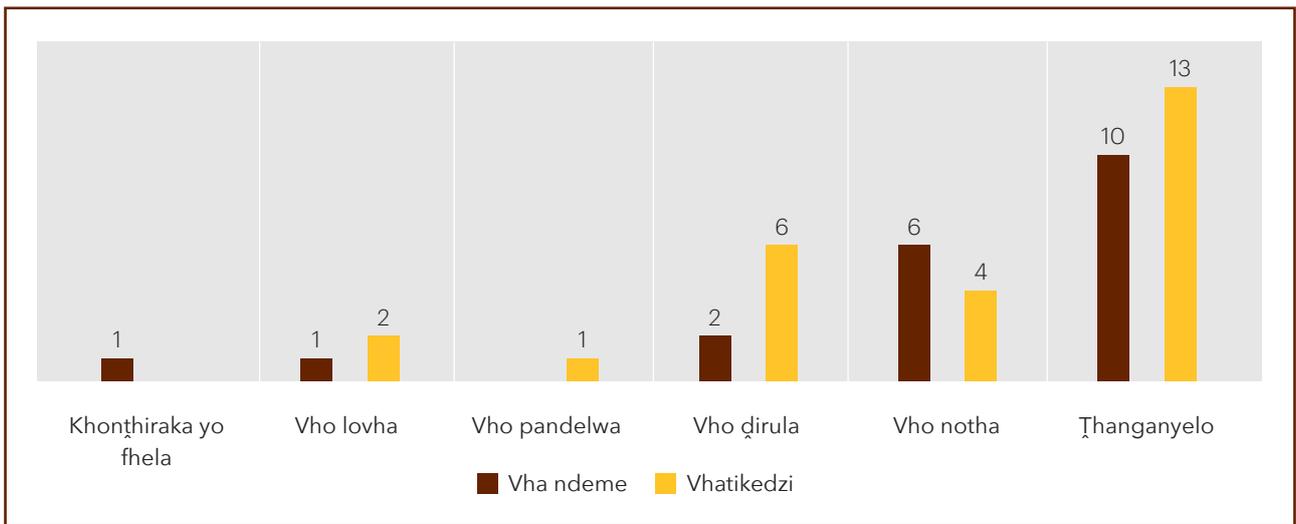
1.4 STAFF TURNOVER ANALYSIS



Tshifanyiso tsha vhuñfuraru. Kuñele kwa vhashumi

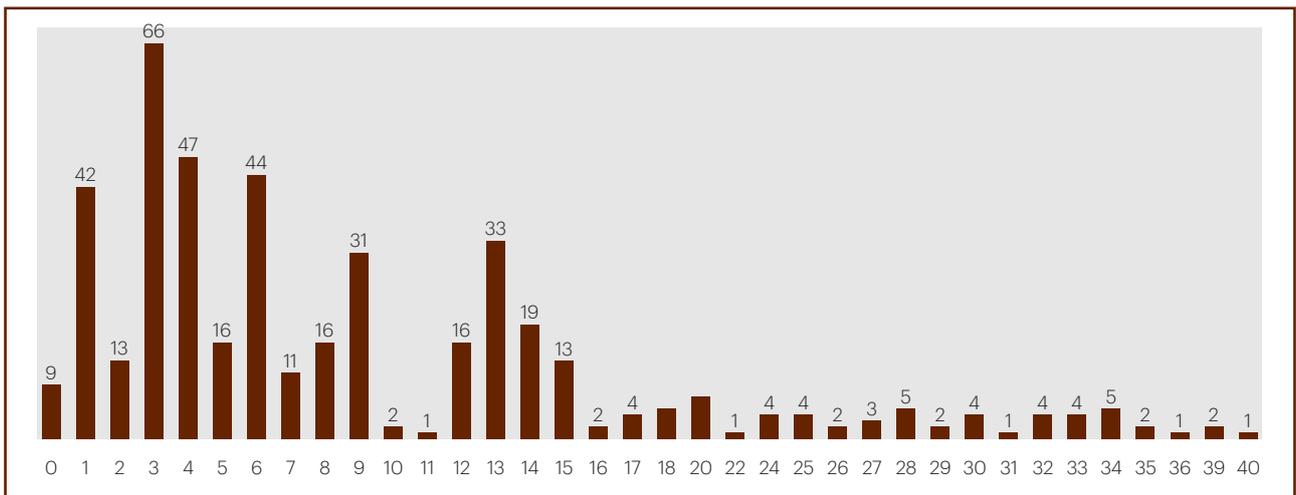
Kuḑele kwa vhashumi ku kala phesenthe ya vhashumi vho tḥwaho vha vha CGS uno ṅwaha uno khou sedzulusa, kathihi na phimo ya u ḑadza zwickhala. ṅwaha wo fhela nga mbuelo ye ya vha fhasi ha 6%, fhasi ha 10% ya thagethe. Phimo iyi yo elana na vhubvedzi ha u vbulunga zwi nga ho sa u guda na mveledziso na u ḑadzwa ha poswo dzi si na vathu kha miṅwedzi miraru. Vhashumi vha u ḑithauba kuḑele kwavho mushumoni (u ḑirula) mushumo

ho vha 35%, hu na 44% ya u fhelisa mushumo nga ṅwambo wa u notha. Sa zwe zwa sumbedziswa kha tshifanyiso tshi re afho fhasi, 56% ya u fhelisa ha mushumo ho bva kha vhashumi vha thikhedzo, vha 75% vha vha u ḑithauba (vha ḑirula mushumo) na kha tshigwada tsha thikhedzo. Zwi a lavhelelwa uri saizwi maraga wa mishumo u na tḥoḑea khulwane ya vhashumi vha thikhedzo u fhira vhorasantsi zwi ḑo tou ralo.



Tshifanyiso tsha vhufuraruthithi. Kushumele kwa vhashumi vha u tikedza na vha ndeme

1.5 KUSHUMELE KWA VHASHUMI VHOṰHE

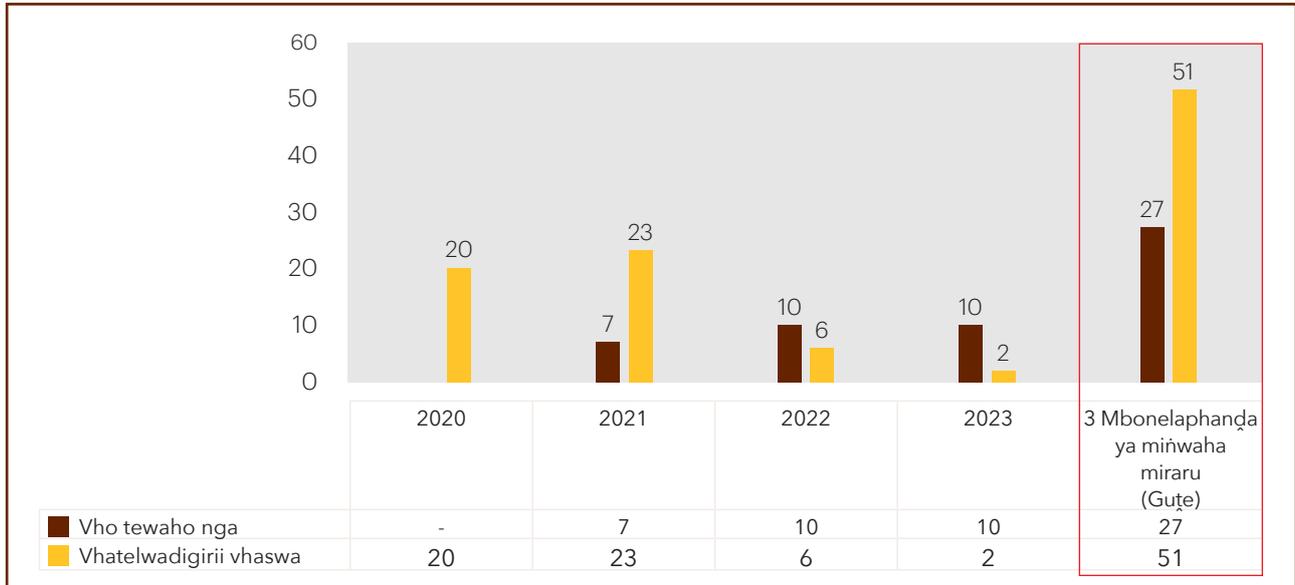


Tshifanyiso tsha vhufurarumbili. Kushumele kwa vhashumi vhoṱhe

U swika kha 56% ya vhashumi vho shuma u swika miṅwaha miṱanu kana u fhira kha CGS. Musi vhashumi vhe na ṅdivho ya mvelele ya tshimiswa, tshumelo, na ndaela, ndinganyiso ya vhusedzi ya vhashumi vhaswa na yone ndi ya ndeme saizwi vha tshi ḑisa mihumbulo miswa na u vhudzisa tshiimo tsha zwithu. Vha CGS vha na mashudu u vha vho ṱanganyisa zwigwada zwi vhili.

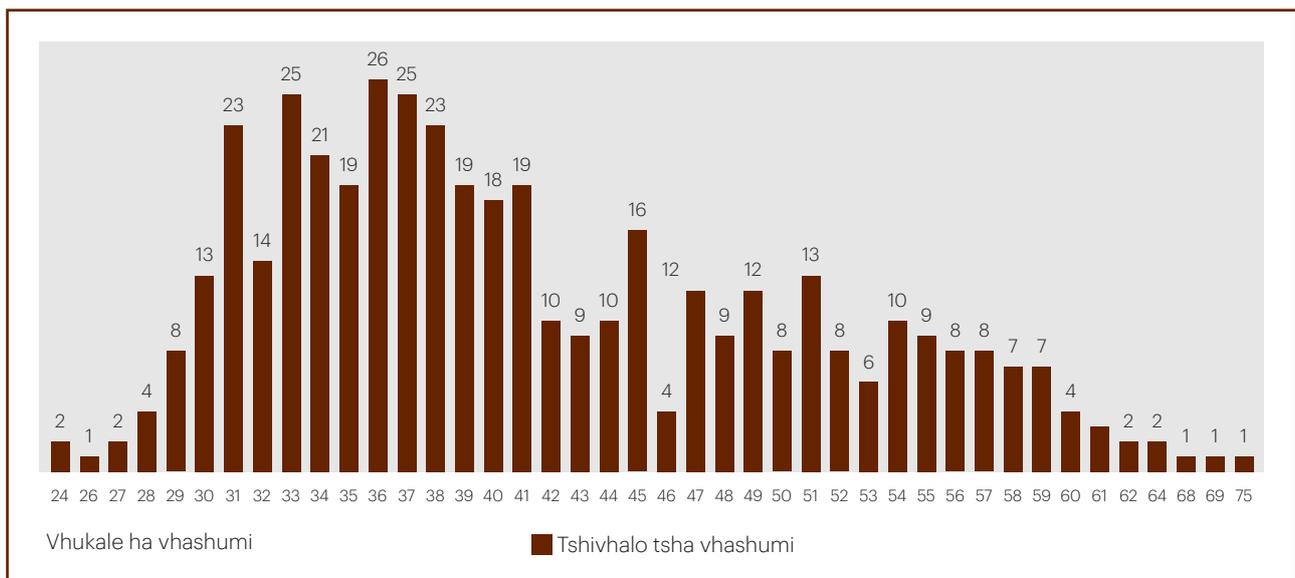
1.6 U ALUSA VHASHUMI VHAU

Vha ndangulo vha a kona u lugisa u dirula mushumo, kana u fhelisa mushumo hu si nga u tou dithauba. Tshifanyiso tsha vhufurarumbili tshi sumbedza vhashumi vha fumbilisumbe vhane vha do notha kha miwaha miraru i dhaho na matshudeni a futhanithihi ane a do fhedza ngudo. Vhuṭoli ha nga ngomu hu do itwa u topola zwikili zwine zwa do vha xeletshela, zwikili zwi salaho na zwi re kha mutevhe (vha re na bazari dza u guda vhe tshikoloni. Hezwi zwi do thusa u vhona thoxea dza vhugudisi dza bindu na zwine bindu lo livhana nazwo.



Tshifanyiso tsha vhufurarutharu. Mpho ine ya khou da

1.7 MUSAUKANYO YA VHUKALE HA VHASHU

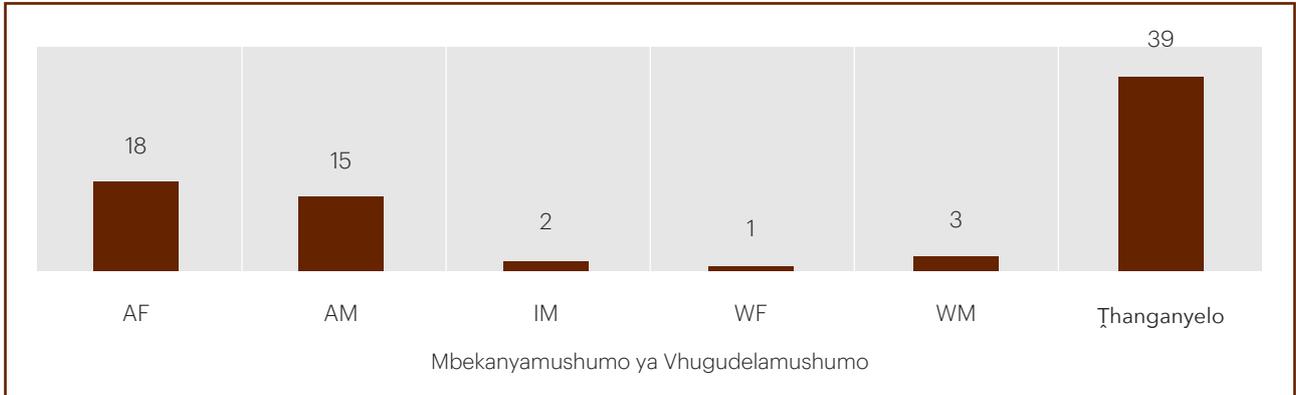


Tshifanyiso tsha furaruiṅa. Musaukanyo wa vhukale

U swika kha 30% ya vhashumi ndi vhaswa, vhane vha nkedza tshikhala tsha u pulana u pfukisela zwikili. Maelana na u bvela phanda ha bindu na vhuṭolamuvhalelano ha tshiofisi mbekanyamushumo ya vhugudisi na vhudededzi i do rangiwa phanda nga vhashumisani vha bindu la zwiko zwa vathu.

1.8 MBEKANYAMUSHUMO YA VHUGUDELAMUSHUMO

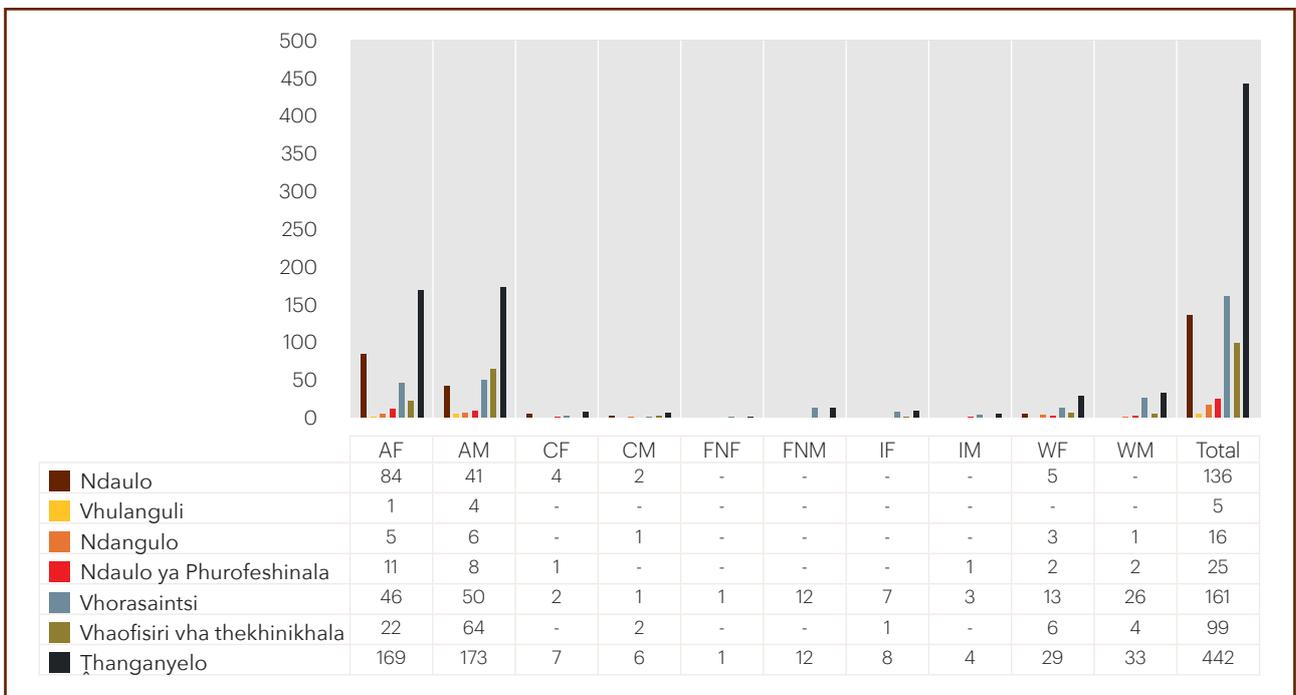
shifanyiso tshi re afha fhasi tshi sumbedza mbalo dza mbekanyamushumo ya vhugudelamushumo kha n'waha une wa khou sedzuluswa.



AF - Vhafumakadzi vha vharema AM - Vhanna vha vharema IM - Vhanna vha Vhalndia; WF - Vhatshena vha vhafumakadzi; WM - Vhatshena vha Vhanna

Tshifanyiso tsha vhufuraruṭhanu. Mbekanyamushumo ya vhugudelamushumo

Vha CGS zwa zwino vha na vhana vhane vha khou gudela mushumo vha 39 kha mbekanyamushumo ine ya tshimbila miṅwaha mivhili. Phesenthe dza fuṭahe iṅa dza vhane vha khou vhane vha khou gudela mushumo vho vheiwa kha zwa ndeme, hu na ndinganyiso ya mishumo ya thikhedzo. Mbekanyamushumo i ṅekedza vhatelwadigirii u shuma mishumo vhukuma u itela u engedza khonadzeo dzavho dza u wana mushumo. Vha CGS vha tevhela vhane vha khou gudela mushumo u bva kha mbekanyamushumo u swika vha tshi wana mushumo wa tshiofisi.



AF - Vhafumakadzi vha vharema; AM - Vhanna vha Vharema; CF - Vhafumakadzi vha Vhakhaladi; CM - Vhanna vha Vhakhaladi; FNF Vhabva nṅa vha vhafumakadzi - Vhabva nṅa vha vhanna; IF - Vhaindia vha vhafumakadzi; IM - Vhaindia vha vhanna; WF - Vhafumakadzi vha vhatshena; WM - Vhanna vha vhatshena

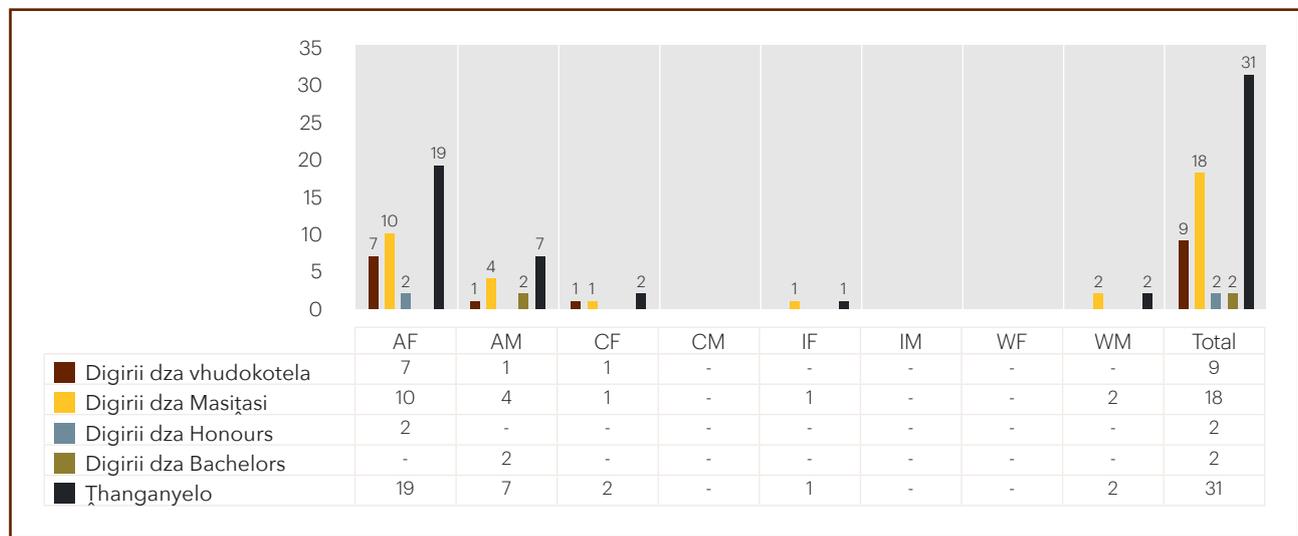
Tshifanyiso tsha furarurathi. Phurofaiḷi ya vhashumi. Zwiṗiḍa nga murafho, mbeu na khethekanyo ya mushumo

Musi ndinganyiso ya mbeu yo swikelela kha levele ya tshiimiswa, vhuimeleli kha mishumo ya ndeme vhu vha vhu kha di tshela. Zwi a vhonala uri, 50% ya vhafumakadzi vha vharema vha kha di vha kha mishumo ya ndaulo ngeno vha 3.6% fhedzi vhe kha vhuimo ha ndangulo. Ndagulo i khou dzhiela ntha zwa 'khethululo i pfallaho' maelana na Pulane dza Ndinganyiso ya Kushumele u kwhathisedza uri vhezhi ha vhanna vha vharema vho tholwa kha zwiimo zwa ndeme.

1.9 BAZARI

1.9.1 BAZARI DZA U GUDA U TSHIKOLONI

Mbekanyamushumo ya bazari dza u guda u tshikoloni dzi tikedza mpho dza matshudeni ane a bva mitani ya vhashai ane a si kone u swikelela pfunzo dza ntha. Nga nwa wa akademi wa 2020, matshudeni a furaruthihi o tikedzwa. Tshifanyiso tsha vhafara bazari vha furarusumbe kha nwa une wa khou sedzuluswa.



AF - Vhafumakadzi vha vharema; AM - Vhanna vha Vharema; CF - Vhafumakadzi vha Vhakhaladi; CM - Vhanna vha Vhakhaladi; Vhaindia vha vhafumakadzi; IM - Vhaindia vha vhanna; WF - Vhafumakadzi vha vhatshena; WM - Vhanna vha Vhatshena

Tshifanyiso tsha vhfurarusumbe. Bazari dza u guda u tshikoloni

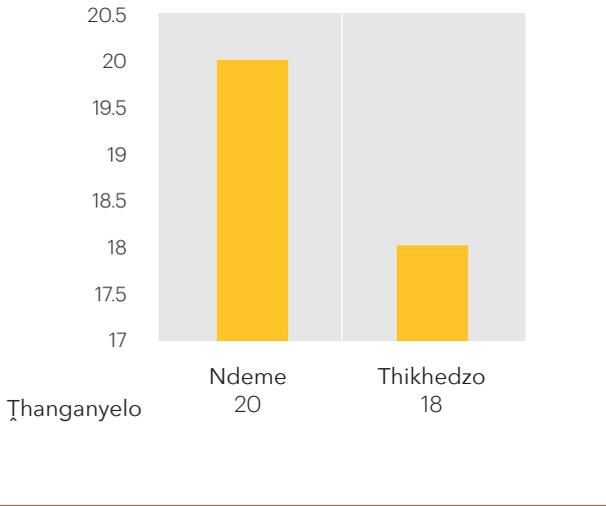
Kha vha furaruthihi vhane vha khou guda nga bazari vhe tshikoloni, 61% ndi vhafumakadzi vha vharema na 22% ndi vhanna vha Vharema. Phesente dza fusumbe malo na vha tshela vha PHD ndi vhafumakadzi vha vharema vhane vha khou guda vhe tshikoloni. Musi tshivhalo itshi tshi takadza, a tsho ngo sumbedzwa kha vhashumi vha CGS.

Bazari dzi nekedzwaho kha vhashumi u itela ngudo dza fhasi ha vhtelwadigirii na dza ntha ha vhtelwadigirii 2020/21 nwa ya muvhalelano dzo ita R2.5 milioni na u vhuenda vhashumi vha 38. Tshifanyiso tsha vhfurarusumbe tshi sumbedza vha gudaho vhe hayani nga bazari kha nwa une wa khou sedzuluswa.

1.9.2 VHA GUDAHO VHE HAYAN NGA BAZARI

Tshikimu tsha bazari tshi tendela vhashumi u ita khumbelo ya thikhedzo ya ngudo kha khoso dzine vha tshela u guda kha mveledziso yavho ya bufo.

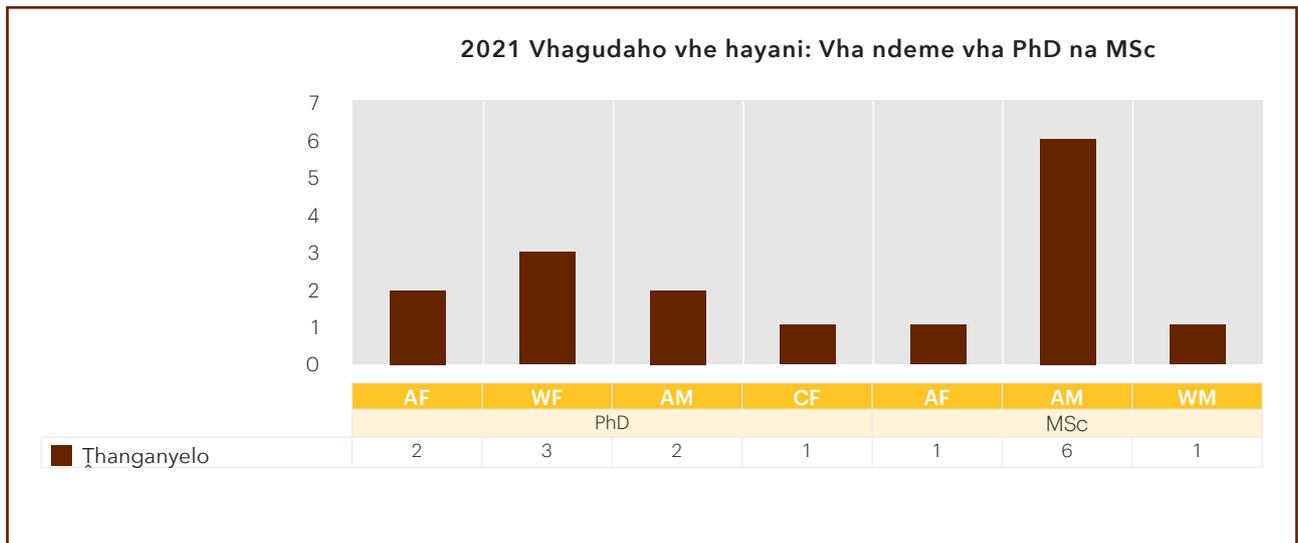
Thukhukanyo ya vathu vhaswa vha gudaho nga bazari vhe hayani



Mbekanyamushumo ya bazari ya u guda u hayani ndi ya ndeme kha mveledziso ya buḁo la CGS na zwiṭirathedzhi zwa u vhulunga. Ho vha hu na vhagudaho nga bazari vhe hayani vhaswa vha 38 kha ṅwaha une wa khou sedzuluswa u mona na yunithi ya bindu. Vhagudi vhaṅe vha ndeme na vha 12 vha vhatikedzi- 53% ya ṭhanganyelo ndi vhafumakadzi, ngeno 47% hu vhanna. Heyi ndi iṅwe tsumbo ya u alusa vhashumi vhau u khwaṭhisedza uri hu na ndinganyiso ya mbeu.

Tshifanyiso tsha vhufuraruṭahe tshi sumbedza vhagudi vha 16 vha PhD na digirii ya Master’s kha uno ṅwaha dza vha na PHD dza malo 75% yavho ndi vhafumakadzi. Mugudi wa Master’s ndi muthihi wa mufumakadzi hune vhagudi vha Master’s, 75% vha vha vharema.

Tshifanyiso tsha vhufuraramalo. Thukhukanyo ya vha gudaho nga bazari vhe hayani



Tshifanyiso tsha vhufuraruṭahe. Vha gudaho vhe hayani: Vha ndeme vha PhD na MSc

1.10 U DZHENELELA HA VHUGUDISI HO KHUNYELEDZWAHO UNO NWAHA

Thoho ya vhugudisi	Tshivhalo tsha vhashumi vho gudiswaho
Giravithi na u vhona u kule	Vhashumi vha t̄ahe
Thasululo dza vhugudisi dzo angalalaho	Vhashumi vhararu
Vhaimelili vha mutakalo na tsireledzo	Vhashumi vha fumiṭahe Mushumi muthihi
Muṅetshedza thusoṭhanzi ḽevele 1	Vhashumi vha fumi Vhashumi vha furaruthihi
Kuvhusele kwa vhuṭolamuvhalelano, Tshiṭirathedzhi, Mikhwa na Ndangulo ya khohakhombo	Vhashumi vhavhili
Khwaṭhisedzo ya ndeme na Mbekanyamushumo yo khwiniswaho	Mushumi muthihi
U sika tshikiriputhi tsha Pyhtins ArcGIS	Vhashumi vhaṭanu
Musaukanyo wa saintsi ya vhupo- Mvulatswinga	Vhashumi vha fumiṭhanu
Musaukanyi sa saintsi ya vhupo kha lubuvhisia - Vhugudisi	Vhashumi vha fumimbili
Ndangulo yavhuḽi ya vhashumisani	Mushumi muthihi
Zwikili zwa u vhiga	Mushumi muthihi
khwaṭhisedzo ya ṭanganelanaho - Vhaṭolamuvhalelano vha nga ngomu	Vhashumi vhavhili

1.11 INVESTING IN YOUTH



// Vhushaka ha mulalo
ho sedzwa u bvelela
ha bindu

VHO MUFA NEMUDZIVHADI

Vho dzhoina lini vha CGS?

Ndo dzhoina nga 2011 sa Unit Administrator.

Vho vha vha tshi toḁa u ita mini musu vha kha maḁiriki?

Ndo vha ndi khou toḁa u vha xenḁe.

Vha CGS vho vha thusa hani u khunyeledza miloro yavho?

Vha CGS vho badela ngudo dzanga dza mulayo UNISA. Mulanguli wangs, Dr Jonty Tshipa, vho nnzhenisa kha mbekanyamushumo ya mveledziso na u gudiswa kha khethekanyo yavho ya vhushaka ha vhashumi. Ndo dzula nga fhasi ha vhugudisi havho na vhulavhelesi havho musu ndi kha mbekanyamushumo.

Mushumo wavho zwino ndi ufho?

Mushumo wanga zwino ndi Employee Relations Officer.

Vha vha vha khou ita mini nahone u vha vhuedza ngani?

Mushumo u bveledza vhushaka ha mulalo vhukati ha ndangulo na vhashumi. U vhuedza ngauri u katela u bveledza mbekanyamaitele na zwiḁirathedzhi ine ya dzhenelela kha milayo ya pfanelo dza vhatu sa tshirunzi, u sa dzhia sia, ḁhonifho, ndinganyiso mushumoni. Hu na milayo ya ndeme kha dimokirasi Afrika Tshipembe.

Zwi ḁumana hani na zwipikwa zwa tshiḁirathedzhi zwa vha CGS?

Vha CGS vha tenda u bveledza ndaela yavho ya thekhinikhala nga ngila ine ya tikedza tshanduko na vhuḁifhinduleli ha mveledziso ha lushaka. Muofisi wa vhushaka ha vhashumi u tshimbidza zwipikwa zwa tshanduko a khwaḁhisedza u tevhedza Mulayo wa Ndinganyiso ya Kushumele na dziḁwe nyendedzi na theo ya mulayo.

Ndi mini zwi vha neaho khaedu?

Ndinganyiso i sa gumi vhukati ha tsireledzo ya pfanelo dza vhashumi na vhuḁifhinduleli havho.

Hu na tsedzuluso, vho vha vha tshi ḁo vha vho nanga ḁiḁwe buḁo?

Hai. Ndi vhona mulayo wa zwa vhashumi u na mbuelo vhukuma.

Vha nga ḁuḁuwedza hani:

- **Vhaswa vhane vha khou toḁa u tevhela buḁo ḁavho?**
Ndi nga vha vhudza uri vha tevhela buḁo ḁiḁ arali vhe na lufuno lwa mishumo i konḁaho ya mulayo na u toḁa u bva fhethu ha u ḁigeḁa.
- **Vhashumi vha CGS vha vha tamaho vha re nga fhasi havho?**
Kha vha farelele kha miloro yavho vha dzule vha khou shumela u i khunyeledza.



// U vala tshikhala
vhukati ha lupfumo
lwa vhupo na
mutakalo

DOKOTELA VHO THAKANE NTHOLI

Vho dzhoina lini vha CGS?

Nga la 4 Phando 2016.

Vho vha vha tshi toda u ita mini musu vhe kha matiriki?

Ndo vha tshi tama u vha rasaintsi wa zwa vhupo.

Vha CGS vho vha thusa hani u swikelela miloro yavho?

Musi ndi yunivesithi, ndo wana uri muloro wanga ndi u linganyisa u diphiya nga zwiko zwa lifhasi zwavhuḍi na u vhulunga vhupo. Hezwi ndi zwone zwine nda ita zwone kha CGS. Nga u rangaphanda u dzhenela kha thandela dzi elanaho na dzilafho la maḍi a migodi u vha hone ha zwa migodi na vhupo nga kathihi, ndi vala tshikhala vhukati ha lupfumo na mutakalo wa pulanethe.

Mushumo wavho wa zwino ndi ufho?

Minidzhere: Yunithi ya Maḍi na Vhupo

Mushumo wavho ndi u ita mini nahone u vhuedza hani?

Mishumo wanga u katela u sika na rangaphanda thimu ire na vhukoni ya Yunithi ya Maḍi na Vhupo. u dovha wa konisa thimu u shuma thandela na u dzhenela kha zwiḥirathedzhi zwa vha CGS. U vhuedza ngauri ndi vhona nyaluwo, mveledziso na u bvelela ha thimu yanga. U divha uri kha thandela inwe na inwe ri a dzhenela kha ndangulo ya khwine ya zwiko zwa maḍi na vhupo vhu a takadza.

Zwi tumana hani na zwipikwa zwa tshirathedzhi zwa vha CGS?

Ndi khwaḥisedza u shumiwa zwavhuḍi ha thandela dzi dzhenelaho kha ndaela ya vha CGS. Ndi dovha nda vha na vhuḥumani na vhulanguli vhuhulwane na thimu ya saintsi.

Ndi mini zwi vha neaho khaedu?

U sa pfesesa zwavhuḍi uri zwa migodi na vhupo zwi nga si ime zwoṭhe, sa mutalukanyo. Sa minidzhere, ndi tama u fhaṭa thimu ine ya vha na bono la tshifhinga tshilapfu, i vhonekhalo u fhira nṱwaha ya muvhalelano une ra vha khawo kana mutevheṭhandu wa muhanga wa zwibviswa wa tshifhinga tsho linganelaho.

Hu na tsedzuluso, vho vha vha tshi do vha vho nanga buḍo lo fhambanaho?

Hai, ndi funa zwine nda zwi ita.

Vha nga tuṭuwedza hani:

- **Vhaswa vhane vha khou toda u tevhela buḍo lavho?**
Vha tea u divha zwi vha takusaho, fhedzi a vho ngo tea u tou vha na zwidodombedzwa zwoṭhe. vha tea u tou lwa nga nungo na u dzhia zwikhala musu zwi tshi ḍa. vha vhulunge kha vhone vhaṅe na u dihudza mushumoni wavho saizwi u tshi ḍo dzula u tshi vha ambela.
- **Vhashumi vha CGS vha vha tamaho vha re nga fhasi havho?**
Bono la vha CGS ndi u swikelela nga kha u dzhenela ha mushumi muṱwe na muṱwe. Kha tshumisano na u tikedzana ri a kona. Nṱhani ha izwo, vha CGS vha nekedza zwikhala zwi sa fani na zwiṱwe zwa nyaluwo na mveledziso - kha vha zwi shumise vhukuma.



// Musaukanyo na ndingo ndi zwone zwe dokotela a laedza kha Vho Nontobeko

VHO NONTOBKO MAGWAZA

Vho dzhoina lini CGS?

Nga la 1 Khubvumedzi 2016.

Vho vha vha tshi tōda u ita mini musi vhe kha maṭiriki?

Ndo vha tshi tshi tama u gudela MBChB, fhedzi musi ndi tshi tṅangedzwa Yunivesithi ya Witwatersrand, khotsi anga vha si pfane na khetho iyo. Vha ri ndi muṭuku u nga ya Gauteng saizwi vho vha vha tshi tenda uri vhutshilo ho tṅanganana ndi nga si kone. Nda dzhena Yunivesithi ya Natal (ine zwino ya vha University ya KwaZulu-Natal) nda ita Bachelor's.

Vha CGS vho vha thusa hani u swikelela miloro yavho?

Vha CGS vho vha na fulufhelo kha nṅe nga u nthola sa Murangaphanda wa Khethekanyo: Ya zwa Vhupo. vha dovha vha lambedza ngudo dzanga dza Master's kha ṅwaha wa u fhedzisela. Vha CGS vho dovha vha mpha mushumo wa u vha minidzhere wa yunithi ya bindu o farelaho zwe zwa vha tshanduko ya mveledziso ya buḍo kha nṅe. Ndo guda zwinzhi nga ha ndangulo, tshīṭirathedzhi na vhupulani na tshumiso, masheleni na zwiko zwa vhathu. Ndi tenda uri u dzhena afha zwo ntshandukisa u bva kha rasaintsi u ya kha minidzhere. Nda tholwa u vha minidzhere wa yunithi. Nṅhani ha izwo, vha CGS vha khou badela ngudo dzanga dza PHD na u ndzhenisa mbekanyamushumo ya mveledziso ya ndangulo.

Mushumo wavho wa zwino ndi ufho?

Minidzhere wa yunithi ya bindu: Tshumelo dza vhusaukanyi

Mushumo wavho ndi u ita mini nahone u vhuedza hani?

Mishumo wanga u katela u langa kushumele kwa thimu ya laborathori ya saintsi ya vhupo ya vhorasaintsi vha re na ndalukanyo na zwikili zwa nṅha. Thekhnishiene kha u shumisa thekhinoḷodzhi ya tshizwinozwino, u ṅekedza mvelelo dza vhuronwane nga tshifhinga dza vhusaukanyi dzine dza swikelela tḥoḍea dza vharengi na tḥoḍea dza ISO 17025. Mushumo u dovha wa katela u ṅekedza ngeletshedzo ya phurofeshinala ya thekhnikhala, ndangulo ya thandela, u ṅwala mivhigo ya thekhnikhala, ndangulo ya vhathu, vhukwamani na vhashumisani, ndangulo ya kushumele na ndango ya mugaganyagwama.

Zwi vhuedzaho tshoṅhe ndi u bveledza thimu yanga, nga maanda avho vhe vha vha vha sa dzhielwi nṅha kale, u shumisa ndangulo ya khuḍano na u dzhenelela kha mvelelo mbuya, na u ḍivha daya ya musaukanyo yo bveledzwaho kha laborathori dzashu na uri i a kwama mvusuludzo na nyaluwo ya ikonomi ya shango.

Zwi tṁana hani na zwipikwa zwa tshīṭirathedzhi zwa vha CGS?

Mushumo wanga ndi wa yunithi ya tshumelo ya musaukanyo ndi u tikedza GTP, zwine zwa vha tshipiḍa tsha u shumisa IMM, Ri fha tshumelo dza musaukanyo na u eletshedza kha thandela dzo fhambanaho dza CGS u kwhaṅhisedza uri hu na zwishumiswa zwa vhusaukanyi zwa maimo a nṅha na uri thimu yanga ina nḍivho, zwikili na thekhniki dza musaukanyo dza u nga shuma mushumo wa vhusaukanyi u elanaho na tshīṭirathedzhi tsha bindu la vha CGS.

Ndi mini zwi vha fha ho khaedu?

Mushumo wanga u toḁa nungo na ndangulo ya tshifhinga ndi ya ndeme. Ndi shuma awara nnzhi, fhedzi ndi a tenda uri nga ndoṁhe ndi nga si kone. Ndi a rumela vhaṁwe kha thimu yanga. ISO 17025 i ita uri ndi dzule ndo vuwa. Laborathori dzashu a dzi athu u akhiredithiwa kha ISO 17025 kana u sethifaiwaho kha ISO 9001. Fhedzi, thimu yanga i khou shuma na yunithi ya bindu u shumisa ṁhoḁea dza maga a ISO aya kha u lugela u akhiredithiwa na u wana ṁhanziela.

Hu na tsedzuluso, vho vha vha tshi ḁo vha vho nanga ḁiṁwe buḁo?

Hai. Ndi pfa ndo takala vhukuma uri zwa dzilafho a zwi ngo ite. Saints ndi buḁo ḁi takadzaho ḁi re na zwikhala zwi takadzaho. Fhedzi, ndi buḁo ḁi konḁaho ḁo serekanaho ḁine ḁa toḁa uri muthu a humbule hu na tsatsaladzo, u saukanya na u ela thaidzo kana nyimele.

Vha nga ṁṁuwedza hani:

- **Vhaswa vhane vha khou toḁa u tevhela buḁo ḁavho?**
Vha tea u vha na lufuno lwa zwikili zwa saints, thekhinoḁodzhi, vhuinzhiniara na metse (STEM).

Vhunzhi ha mashango a kha ḁi livhana na ṁhahelero ya zwikili zwa saints nga maṁḁa kha muvhuso, dzifeme, kha akademi na zwiimiswa zwa ṁhoḁisiso. Ndi ṁṁuwedza vhaswa, nga maṁḁa. vhafumakadzi, u dzhiela ṁṁa buḁo ḁa STEM u itela u vala tshikhala. Vhafumakadzi a vha na vhaimeleli kha mishumo ya STEM.

- **Vhashumi vha CGS vha vha tamaho vha re nga fhasi havho?**

Kha vha futelele, vha wane ndivho na zwikili zwo teaho kha zwipikwa zwa buḁo ḁavho na u wana mugudisi uri a vha endedze kha zwikili zwavho kha yunithi dza CGS dzo fhambanaho u itela musi zwi tshi toḁea. Vha pfesese mbekanyamaitete, zwithu zwa ndeme, mvelele na tshiṁrathedzhi kha CGS - uri ho livhiwa ngafhi na uri mushumo wavho u dzhenelela hani kha kushumele, tsha u fhedzisela, mikhwa, ṁhonifho, vhuthu ndi zwithu zwa ndeme kha u shuma na miraḁo ya thimu yavho.



// U bva kha Rasaintsi
u ya kha hoho ya
tshi irathedzhi

DOKOTELA VHO VALERIE NXUMALO

Vho dzhoina lini CGS?

Nga Lara 2007 sa mudivhamahe mutuku kha Yunithi ya Nzudzanyo ya Madzingu a Vhukati

Vho vha vha khou tōda u ita mini musu vhe kha maṭiriki?

Ndo vha ndo humbula u vha Makone wa Thekhinolodzhi ya Mafhungo kana muinzhiniara. Fhedzi, nga ṅwaha wanga wa maṭiriki, mukomana wanga wa Metallurgist a ita uri ndi vhone zwa Vhudivhamahe. Zwenezwo, khotsi anga vha ḍa na gurandḍa ya Sowetan nga 2001 ye ya vha i na athikili ya nga ha 'Khosho ya zwa migodi ya vhafumakadzi'. Nda vhona athikili nda i funa saizwi yo ṭalutshedza mushumo wa Vhudivhamahe na u ṭutuwedza vhafumakadzi u vha tshipiḍa tsha ṅdowetshumo ya migodi. Zwenezwo, ṭhutuwedzo ya athikili na thikhedzo ya vha muṭa, zwa ita uri ndi nange zwa vhudivhamahe sa buḍo na u sa dovha nda ḍi sola nga khetho yanga.

Vha CGS vho vha thusa hani u swikelela miloro yavho?

Vha CGS vho khwaṭhisedza uri ndi a dzhenelela kha thandela dza saintsi dza vhupo dzo fhambanaho na u bveledza pfunzo dzanga. Vha nthusa u wana Master's in Geology kha Yunivesithi ya Witwatersrand nga 2011 na PhD in Geology kha Yunivesithi ya Johannesburg nga 2020 hu na thikhedzo ya CGS. Ndi a ḍihudza u amba uri muvhuso wa Afrika Tshipembe, nga kha CGS, u bvela phandḍa na u bveledza vhaḍivhamahe makone vhane vhaṅwe ndi vhomakone kha vhupo hu sa gudeswi ha Karoo-aged basins hu nga ho sa

Springbok Flats Basin. Nṅhani ha izwo, vha CGS vha ndzhenisa kha mbekanyamushumo ya vhugudisi he nda guda kha

vhaṅwe miraḍo ya thimu ya ndangulo ya ṅṅha u bva kha vhudivhamahe ha ikonomi na yunithi ya ndangulo ya tshiṭirathedzhi.

U takuwa hanga kha vhuimo ha CGS zwo vha zwi tshi ḍovha zwi songo konadzea hu si na thikhedzo ya vha thimu ya ndangulo, na vhulavhelesi ha yunivesithi. havha vhatu vho vhona u futelela hanga kha vhudivhamahe (nga maandḍa u pfesesa besini dza Karoo-dza kale dzi langiwaho nga folothi) na bindu ḷa vha CGS nga u angaredza. Vho vhona vhuḍikumedzeli hanga na uri ndo dzhenelela vho kha nyaluwo ya dzangano.

Mushumo wavho zwino ndi mini?

Minidzhere wa Ofisi ya Ndangulo ya tshiṭirathedzhi

Mushumo wavho ndi u ita mini nahone u vhuedza hani?

Sa Minidzhere wa Ofisi ya Ndangulo ya tshiṭirathedzhi, ndi na vhuḍifhinduleli ha tshiṭirathedzhi na vhupulani ha bindu, thikhedzo ya Bodo, thandela dzo khetheaho na miṅwe mishumo ya bindu. Ndi dovha nda shuma kha ḷevele dzoṅhe dza vhurangaphandḍa na u shuma zwavhuḍi na vhashumisani vha ndeme kha mishumo yoṅhe. Ndi a kona u vha na mbonelaphandḍa ya vha CGS na u vhona uri masiandaitwa na mvelelo, nga kha u pfesesa tshiṭirathedzhi na bindu, ndi dzulela u guda zwinzhi nga ha ndangulo ya tshiṭirathedzhi, nzudzanyo ya pulane dza tshiṭirathedzhi hu na vhuḍifhinduleli ha lushaka na zwipikwa zwa DMRE na uri tshiṭirathedzhi tshi livhana hani na khaedu dza

matshilisano. Vhuimo uvhu vhu dovha ha ntendela u kwamana na vhashumisani vha nga ho sa Bodo ya CGS na DPME, Muṭolamuvhalelano Muhulwane, Phalamennde na miṅwe mihasho ya muvhuso.

Zwi ṭumana hani na zwipikwa zwa tshiṭirathedzhi zwa vha CGS?

Ofisi ya Ndangulo ya tshiṭirathedzhi ndi mushumo wa ndeme wa bindu wa vha CGS nahone u katela u ela zwo sedzwaho zwino zwa tshiṭirathedzhi, zwipikwa, bono, masiandaitwa, mvelelo na pulane dza bindu dza matshelo.

Ndi mini zwi vha ṅekedzaho khaedu?

U eletshedza vha CGS u bvela phanḁa na u bveledza, u shumisa zwiṭirathedzhi wa maṭhakheni zwine zwa ita uri saintsi dza vhupo dzi vhe na masiandaitwa na mvelelo mbuya kha tshishavha, lwa tshifhinga tshilapfu, tsho linganelaho na tshipfufhi.

Hu na tzedzuluso, vho vha vha tshi ḁo vha vho nanga liṅwe buḁo?

hai - u vha muḁivhamahe kha la Afrika Tshipembe zwi ita uri ndi vhone uri vhatu vha na vhukoni ha u thusa muvhuso u swikelela zwipikwa izwi.

Vha nga ṭuṭuwedza hani:

- **Vhaswa vhane vha khou ṭoḁa u tevhela buḁo la vho?**

Ndi zwa ndeme u vha na bono, u tevhedza zwine wa zwi funa na u nanga buḁo liṅe vha li funa. Vhuḁivhamahe ndi ha ndeme kha Afrika Tshipembe na dzhangho. Afrika i dzula i khou bvelela na malaṭwa a minerala aḁo o pfumaho. Phurofesheni ya vhuḁivhamahe i tea u wana thasululo dza vhubvedzi dza u livhana na khaedu dza dzhangho na liḁhasi.

- **Vhashumi vha CGS vha vha tamaho vha re nga fhasi havho?**

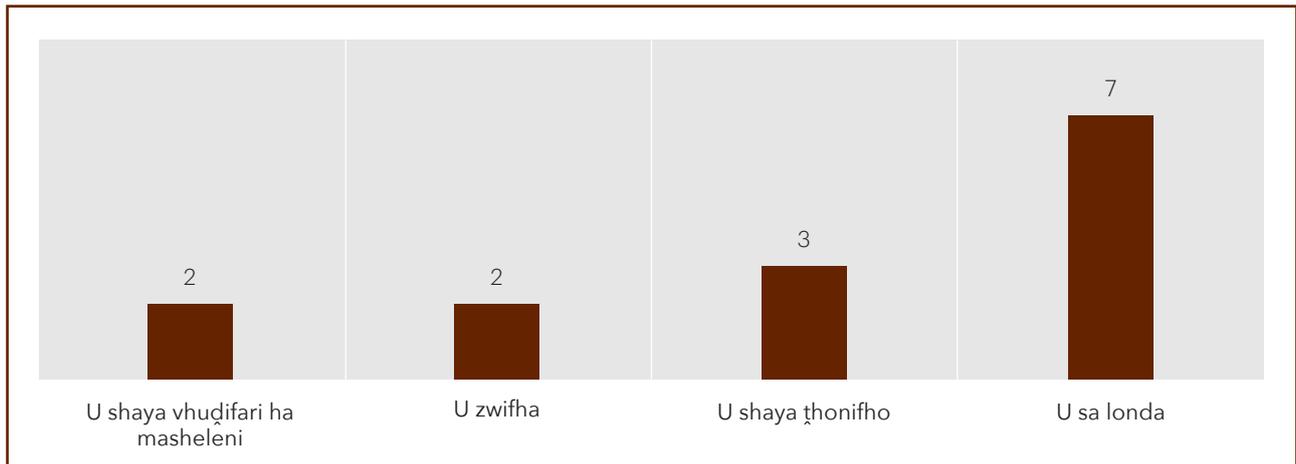
Kha vha futelela na dzhenelela kha saintsi dza vhupo nga u shuma kha thandela dzo fhambanaho na mbekanyamushumo dza CGS. U bveledza vhone vhaṅe kha CGS saizwi i tshi ṅekedza zwikhala zwiḁulwane zwa u bvelela ha vhashumi ha dzhenelela kha u bveledza zwipikwa zwa tshiṭirathedzhi.



Outcrops dza pegmatites kha Vundu la Northern Cape

1.12 VHUSHAKA HA VHASHUMI

Musi wa n̄waha une wa khou sedzuluswa ho vha na milandu ya vhuḍifari vhu si ha vhuḍi na mbilaelo dzo ḍiswaho. Mulandu muhulwanesa wo vha wa u sa londa, wa tevhelwa nga wa u shaya ḥthonifho, vhuḍifari vhu si havhuḍi ha zwa masheleni na u zwifha. Tshiimiswa tsho eletshedza vhashumi na u tevhedza milayo yatsho. Vhugudisi nga ha uri hu langwa hani ndaṭiso mushumoni zwe zwa itwa nga 2021/22.



1.13 TSIRELEDZO NA MAFUVHALO A TSHIFHINGA TSHO XELAHO

Ho vha na milandu mivhili ya u huvhala mushumo yo vhwigwaho kha n̄waha une wa khou sedzuluswa ha dzhiwa maga a u thivhela u itea hazwo hafhu.

1.14 MISHUMO YO PULANIWAHO YA 2021/22

Mishumo i tevhelaho i dzula i khou itea nahone i ḍo itwa nga 2021/22:

- U sala murahu vha gudelaho mushumo kha CGS na zwine vha ḥanga nazwo
- Tsedzuluso ya tshiedziswa tsha mbadelo
- U ita uri zwa u thola na kushumele zwi vha othomethiki
- U dzhiela n̄ṭha n̄ḍivho ya kale
- Tsedzuluso i sa gumi ya mbekanyamaitele
- Maitete na ndangulo ya phurobesheni o dzudzanyelwaho u ḍo itwa
- Vhuṭolamuvhalelano zwa zwikili nga u angaredza zwa tshiimiswa
- Tshivhumbeo tshiswa tsha tshiimiswa/tshumiso na mupfuluwo
- Maitete a zwiko zwa vhatu na maitete a maṅwalwa (ISO9001)
- Vhupfumbudzi ha vhashumi

1.15 KHAEDU

Mphomali dza mutheo dzo fhungudzea kha miṅwaha ya zwino, zwo thivhelaho tshiimiswa kha u nga ṅekedza vhugudisi ha nga ngomu mushumoni kha vhatu vha re na bazari na kha mbekanyamushumo dza vhutelwadigirii musu vha tshi fhedzisa ngudo. Nyimele yo ṅaṅiswa nga COVID-19, ye ya fhungudza muthelo nga R90 miḷioni. Ndagulo, na thikhedzo ya Bodo, vho vha vha khou sedza dziṅwe n̄ḍila dza u takula mbuelo dza masheleni.

TSHIPIḐA TSHA E: MAFHUNGŌ A MASHELENI

Tshipiḑa itshi tshi ḡekedza luvhonela kha nyimele ya masheleni ya tshiimiswa na u katela zwiteḡwa zwi tevhelaho:

- Tshitatamennde tsha vhuḑifhinduleli kana Zwitatamennde zwa Masheleni zwa Ḥwaha nga Ḥwaha kha ḡwaha wo fhelaho nga 31 Ṭhafamuhwe 2021, tsho sainwaho nga CEO, Vho Mabuza, na Mudzulatshidulo wa Bodo, Dokotela Vho Mathe;
- Muvhigo wa CEO, une wa katela tzedzuluso nyangaredzi ya masheleni na u sedzulusa mishumo yo dzinginywaho i elanaho, u vhulungwa ha zwo salaho, ndangulo ya ḡḡisedzo ya tshumelo, muvhigo wa vhuṭolamuvhalelano na pulane dza matshelo;
- Muvhigo wa zwa Vhuṭolamuvhalelano kha Phalamennde ya CGS. Muvhigo yu u ḡekedza muhumbulo nga ha u sa dzhia sia ha Zwitatamennde zwa Masheleni zwa Ḥwaha nga Ḥwaha kha u ḡekedza tshiimo tsha tshiimiswa tsha masheleni, kushumele zwa masheleni, nyelelo u ya nga maga a SA a GRAP na ṭhoḑea dza PFMA kha zwiteḡwa zwoṭhe zwa ndeme. U vhiga kha kushumele kwa mulayo na u tevhedza ndaulo, ndango ya vha gudelaho mushumo na mafhungo a elanaho na
- Zwitatamennde zwa Masheleni zwa Ḥwaha nga Ḥwaha, zwine zwa vha na Tshitatamennde tsha Vhuimo ha masheleni, Tshitatamennde tsha Kushumele kwa Masheleni, Tshitatamennde tsha Tshanduko kha Ndaka ire Hone, Nyelelo ya Kheshe na Notsi dza Zwitatamennde zwa Masheleni.



Vhaḑivhamaha vha CGS vha khou shuma kha sikena tsha haiphasipekithirala kha Ḥaiburari Khulwane ya Lushaka ngei Donkerhoek

1. TSHITAMENNDE TSHA VHUDIFHINDULELI

Tshitamennde tsha vhuḍifhinduleli kana Zwitamennde zwa Masheleni zwa Nwaha nga Nwaha zwa nwaha wo fhelaho nga 31 Thafamuhwe 2021.

Bodo i na vhuḍifhinduleli ha ndugiselo ya Zwitamennde zwa Masheleni zwa Nwaha nga Nwaha zwa nwaha zwa vha CGS na khaḥulo yo itwaho kha mafhungo aya.

Ndi vhuḍifhinduleli ha Vhulanguli ha Muvhalelano u thoma na u shumisa sisiṭeme dza ndango dzo itelwaho u nekedza kwhaḥisedzo i pfadzaho ya tshirunzi na u fulufhedzea na Zwitamennde zwa Masheleni zwa Nwaha nga Nwaha zwa nwaha.

Nga muhumbulo washu, zwitamennde zwa masheleni zwi sumbedza zwavhuḍi kushumele kwa CGS kwa nwaha ya muvhalelano wo fhelaho nga 31 Thafamuhwe 2021.

Vhaṭolamuvhalelano vha nga nḍa vha khou shumiwa navho u bula muhumbulo wo ḍiimisaho kha Zwitamennde zwa Masheleni zwa Nwaha nga Nwaha zwa nwaha wa vha CGS.

Zwitamennde zwa Masheleni zwa Nwaha nga Nwaha zwa nwaha zwa vha CGS kha nwaha wa muvhalelano wo fhelaho nga 31 Thafamuhwe 2021 zwo ṭolwa nga vhaṭolamuvhalelano vha nga ngomu, na muvhigo wavho u nekedzwa kha siaṭari 138 u swika 141.

Zwitamennde zwa Masheleni zwa Nwaha nga Nwaha zwa nwaha zwa CGS zwo bulwaho kha 142 u swika 177 zwo tendelwa.



Vho M Mabuza
Muofisiri Mulanguli Muhulwane
Khoroye Saintsi ya Vhupo
31 Fulwana 2021



Dokotela Vho H Mathe
Mudzulatshidulo
Bodoye Khoroye Saintsi ya Vhupo
31 Fulwana 2021

2. MUVHIGO WA MUOFISIRI MUHULWANE WA MASHELENI



MUOFISIRI MUHULWANE WA MASHELENI

Mr Leonard Matsepe

'Ro aqamelwa nga dwadzetshifu la Covid-19 na vhukondzi halo, vha CGS vho dzudzanyulula mbekanyamushumo yavho ya saintsi ya vhupo nga ndila yone u itela u dzhenelela kha mvusuludzo ya lushaka ya ikonomi. Zwtatamennde zwa nwaha wa muvhalelano zwa masheleni zwo khwaṭhisedza vhuḏikumedzeli uhu.'

Vhubvo

Khoro ya Saintsi ya vhupo yo nwaliswa sa Tshiimiswa tsha Muvhuso tsha Shedulu 3A u ya nga ha Mulayo wa Ndangulo ya Masheleni a Nnyi na Nnyi, Mulayo wa Vhu 1 wa 1999. Zwipikwa zwi re nga fhasi ha u thomiwa ha CGS ndi u bveledza na u anqadza zwibveledzwa zwa ndivho ya saintsi ya vhupo zwa maimo a nṭha na u shuma mishumo ine ya elana na saintsi dza vhupo dza nnyi na nnyi na dza phuraivethe Afrika Tshipembe.

Tshiimo tsha mafheleloni

Vhuimo ha ndinganyiso ho dzikaho hu na phimo ya nyaluwo ya 7% ho londotwa kha miṅwaha ya 12 yo fhiraho. Vha CGS vha na ndaka yo fhelelaho ya ndeme ya R741.4 miḷioni na ndivhanele ya ndozwo ya 1.4: 1 kha ṅwaha ya muvhalelano wo vhogiwaho.

Ndaka na zwishumiswa

U vhulunga hu swikaho kha R49.3 miḷioni ho itwa kha ndaka, zwishumiswa na ndaka i sa kwamei uno ṅwaha. U vhulunga hafhu kha themamveledziso ya saintsi na zwishumiswa zwi dzula zwi zwa ndeme u khwaṭhisedza zwileludzi dza maimo a nṭha na zwishumiswa zwi khou wanala na u londotwa.

Ndangulo ya nyelelo ya kheshe

Kheshe na zwi elanaho na kheshe zwo engedzea u bva kha R232 miḷioni nga 2020 u ya kha R358,3 miḷioni nga 2021, zwe zwa bveledzwa u dzhena ha R126.3 miḷioni. U vhulunga uhu ho itelwa u tikedza u ṭavhanyedzisa mvusuludzo ya ikonomi nga kha tshumiso ya mbekanyamushumo ya saintsi ya vhupo.

Mbilaelo ya misi yoṭhe

Zwtatamennde zwa Masheleni zwa ṅwaha nga ṅwaha zwa ṅwaha zwa CGS zwo lugiswa hu na mbilaelo ya misi yoṭhe. vhulanguli vhuhulwane ho shuma zwa tzedzuluso ya tshiofisi ya vhukoni ha vha CGS u ite u bvela phanḁa na mbilaelo ya misi yoṭhe tshifhingani tshi ḁaho ho sedzwa tzedzuluso iyi, u dzhiela nṭha makumedzwa a zwtatamennde zwa masheleni ho sedzwa uri o tea.

Zwiwo zwa nga murahu ha datumu ya u vhiga

Ndaulo dza Mulayo wa Saintsia ya vhupo dzo sedzaho u bvisela khagala na i shumisa milayo ya Ndeme (Mulayo wa Saintsia ya vhupo wa Vhu 100 wa 1993 na Mulayo wo Shandukiswaho wa Saintsia dza Vhupo Mulayo wa Vhu 16 wa 2010), une vha CGS vha wana ndaela khawo dza u vha mufari na mubveledzi wa mafhungo a saintsia dza vhupo Afrika Tshipembe. Yo gandiswa kha gurandza ya muvhuso u itela mabulamuhumbulo a vhatu. Ha wanala phindulo u bva kha tshitshavha tsha saintsia dza vhupo nga u angaredza dza dzhielwa ntha.

Khumbelo dza u vhulungwa ha zwo salaho

U ya nga ha Khethekanyo ya 53(3) ya PFMA ya 1999, vha CGS vho wana thendelo u bva kha Vhufaragwama ha Lushaka ya vhulunga zwo salaho. Thendelo yo wanala u itela u shumiswa ha zwo salaho u itela u londota na u vhulunga zwishumiswa zwa saintsia na themamveledziso, na tshumiso ya tshirathedzhi tsha u vhekanya. Khumbelo ntswa i do itwa kha nwaha une wa khou sedzuluswa.

Ndangulo ya ndisedzo ya tshumelo

Yunithi ya Ndangulo ya ndisedzo ya tshumelo nga fhasi ha khethekanyo ya Muofisiri muhulu wa Masheleni. Yunithi ya bindu iyi i nekedza thengo yo teaho na sisiteme dza u nekedza, dzi sa dzhii sia, dzi re na ndinganyiso, dzi re na u vha khagala, u vha na mutatisano na u sa dura, na u thomiwa u ya nga ha Khethekanyo ya 54 ya PFMA ya 1999 (sa zwe wa shandukiswa nga Mulayo wa Vhu 29 ya 1999). U ya nga ha BBBEE, Khethekanyo ya 13G (1) ya Mulayo wa B-BBEE, vha CGS vho ita Ndango dza Ndangulo na Mveledziso ya Vhanetshedzatshumelo vha Vhubindudzi.

Mafhungo a muvhigo wa Vhuṭolamuvhalelano

Mafhungo o bulwaho kha muvhigo wa vhuṭolamuvhalelano wa Muṭolamuvhalelano Muhulu o sedziwa u khwaṭhisedza u swikelela khetho dzi si na mbudziso. Vha CGS vho wana muhumbulo u si na mbudziso u bva kha Muṭolamuvhalelano Muhulu kha nwaha wo fhelaho na 31 Thafamuhwe 2021 na u bvela phanda u khwaṭhisedza vhupo ha ndango dza nga ngomu.

U sa nyetha ha masheleni

U itela u khwaṭhisedza u sa nyetha ha masheleni CGS yo diimisela u sedza mafhungo a saintsia dza vhupo nga u angaredza, mafhungo na vhekoni ha saintsia u bveledza ndeme ya ndavhalelo ine ya tea vhupo ha masheleni na ha vhubindudzi.

1. MUVHIGO WA MUTOLAMUVHALENANO MUHULWANE KHA PHALAMENDE NGA HA KHORO YA SAINTSI YA VHUPO

Muvhigo wa zwitatamennde zwa masheleni

Opinion

1. I have audited the financial statements of the Council for Geoscience set out on pages 142 to 177, which comprise the statement of financial position as at 31 March 2021, the statement of financial performance, statement of changes in net assets and cash flow statement for the year then ended, as well as notes to the financial statements, including a summary of significant accounting policies.
2. In my opinion, the financial statements present fairly, in all material respects, the financial position of the Council for Geoscience as at 31 March 2021, and its financial performance and cash flows for the year then ended in accordance with the Standards of Generally Recognised Accounting Practice (Standards of GRAP) and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No. 1 of 1999).

Basis for opinion

3. I conducted my audit in accordance with the International Standards on Auditing (ISAs). My responsibilities under those standards are further described in the auditor-general's responsibilities for the audit of the financial statements section of my report.
4. I am independent of the public entity in accordance with the International Ethics Standards Board for Accountants' *International code of ethics for professional accountants (including International Independence Standards)* (IESBA code) as well as other ethical requirements that are relevant to my audit in South Africa. I have fulfilled my other ethical responsibilities in accordance with these requirements and the IESBA code.
5. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Emphasis of matter

6. I draw attention to the matters below. My opinion is not modified in respect of these matters.

U kha q̄i fhedziswa: HVAC

7. As disclosed in note 12 to the financial statements, material losses of R18 496 000 was incurred as a result of write-off of work in progress relating to the HVAC project.

Hu khou bveledzwa mbalombalo dzo teaho hafhu

8. As disclosed in note 24 of the financial statements, the corresponding figures for 31 March 2020 were restated as a result of an error in the financial statements of the public entity at, and for the year ended, 31 March 2021.

Responsibilities of the accounting authority for the financial statements

9. The accounting authority is responsible for the preparation and fair presentation of the financial statements in accordance with the standards of GRAP and the requirements of the PFMA and for such internal control as the accounting authority determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.
10. In preparing the financial statements, the accounting authority is responsible for assessing the entity's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting unless the appropriate governance structure either intends to liquidate the entity or to cease operations, or has no realistic alternative but to do so.

Auditor-general's responsibilities for the audit of the financial statements

11. My objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with the ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.
12. A further description of my responsibilities for the audit of the financial statements is included in the annexure to this auditor's report.

Muvhigo wa vhuṭolamuvhalelano ha mivhigo ya kushumele kwa ṅwaha

Introduction and scope

13. In accordance with the Public Audit Act 25 of 2004 (PAA) and the general notice issued in terms thereof, I have a responsibility to report on the usefulness and reliability of the reported performance information against predetermined objectives for selected programme presented in the annual performance report. I performed procedures to identify material findings but not to gather evidence to express assurance.
14. My procedures address the usefulness and reliability of the reported performance information, which must be based on the entity's approved performance planning documents. I have not evaluated the completeness and appropriateness of the performance indicators included in the planning documents. My procedures do not examine whether the actions taken by the entity enabled service delivery. My procedures do not extend to any disclosures or assertions relating to the extent of achievements in the current year or planned performance strategies and information in respect of future periods that may be included as part of the reported performance information. Accordingly, my findings do not extend to these matters.
15. I evaluated the usefulness and reliability of the reported performance information in accordance

with the criteria developed from the performance management and reporting framework, as defined in the general notice, for the following selected programme presented in the entity's annual performance report for the year ended 31 March 2021:

Programme	Pages in the annual performance report
Programme 4 - Delivery of the mandate	48 - 49

16. I performed procedures to determine whether the reported performance information was properly presented and whether performance was consistent with the approved performance planning documents. I performed further procedures to determine whether the indicators and related targets were measurable and relevant, and assessed the reliability of the reported performance information to determine whether it was valid, accurate and complete.
17. I did not identify any material findings on the usefulness and reliability of the reported performance information for this programme:
 - Programme 4 - Delivery of the mandate

Other matter

18. I draw attention to the matter below.

U swikelela thagethe dzo pulaniwaho

19. Refer to the annual performance report on pages 32 to 56 for information on the achievement of planned targets for the year and management's explanations provided for the under/over achievement of targets.

Muvhigo wa u tevhedza zwa vhuṭolamuvhalelano na theo ya mulayo

Introduction and scope

20. In accordance with the PAA and the general notice issued in terms thereof, I have a responsibility to report material findings on the public entity's compliance with specific matters in key legislation. I performed procedures to identify findings but not to gather evidence to express assurance.

21. The material findings on compliance with specific matters in key legislation are as follows:

Zwitatamennde zwa masheleni zwa ñwaha nga ñwaha

22. The financial statements submitted for auditing were not prepared in accordance with the prescribed financial reporting framework, as required by section 55(1)(b) of the PFMA. Material misstatements on property, plant and equipment and related parties disclosure note were identified by the auditors on the submitted financial statements. These were corrected, which resulted in the financial statements receiving an unqualified opinion.

Ndangulo ya zwibviswa

23. Effective steps were not taken to prevent fruitless and wasteful expenditure amounting to R18 496 000, as disclosed in note 23 to the annual financial statements, as required by section 51(1)(b)(ii) of the PFMA. All of the fruitless and wasteful expenditure was caused by ineffective contract management on the HVAC project.

Mañwe mafhungo

24. The accounting authority is responsible for the other information. The other information comprises the information included in the annual report, which includes the audit committee's report. The other information does not include the financial statements, the auditor's report and those selected programmes presented in the annual performance report that have been specifically reported in this auditor's report.

25. My opinion on the financial statements and findings on the reported performance information and compliance with legislation do not cover the other information and I do not express an audit opinion or any form of assurance conclusion on it.

26. In connection with my audit, my responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements and the selected programme presented in the annual performance report, or my knowledge obtained in the audit, or otherwise appears to be materially misstated.

27. If based on the work I have performed, I conclude that there is a material misstatement in this other information, I am required to report that fact.

28. I have nothing to report in this regard.

U kundelwa ha ndango dza nga ngomu

29. I considered internal control relevant to my audit of the financial statements, reported performance information and compliance with applicable legislation; however, my objective was not to express any form of assurance on it. The matters reported below are limited to the significant internal control deficiencies that resulted in the findings on compliance with legislation included in this report.

30. Management did not implement adequate controls to ensure that the annual financial statements are prepared in accordance with the applicable framework and supported by accurate, complete and reconciled supporting schedules. There were material misstatements identified on property, plant and equipment and related parties disclosure note, which were subsequently adjusted, resulting in material non-compliance with the PFMA.

31. Management did not ensure that adequate contract management is implemented to avoid fruitless and wasteful expenditure, resulting in material non-compliance with the PFMA.

Auditor - General

Pretoria
31 July 2021



ANEKIDZHA - VHUDIFHINDULEI HA MUṬOLAMUVHALEṬNAO MUHULWANE HA ṬOLAMUVHIGO

1. As part of an audit in accordance with the ISAs, I exercise professional judgement and maintain professional scepticism throughout my audit of the financial statements and the procedures performed on reported performance information for selected programmes and on the entity's compliance with respect to the selected subject matters.

Zwitamennde zwa masheleni

2. In addition to my responsibility for the audit of the financial statements as described in this auditor's report, I also:
 - identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error; design and perform audit procedures responsive to those risks; and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations or the override of internal control
 - obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control
 - evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the accounting authority
 - conclude on the appropriateness of the accounting authority's use of the going concern basis of accounting in the preparation of the financial statements. I also conclude, based on the audit evidence obtained, whether a material uncertainty exists relating to events or conditions that may cast significant doubt on the ability

of CGS to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements about the material uncertainty or, if such disclosures are inadequate, to modify my opinion on the financial statements. My conclusions are based on the information available to me at the date of this auditor's report. However, future events or conditions may cause an entity to cease operating as a going concern

- evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and determine whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation

Vhudavhidzani na avho vha shumaho izwo muvhusoni

3. I communicate with the accounting authority regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.
4. I also provide the accounting authority with a statement that I have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on my independence and, where applicable, actions taken to eliminate threats or safeguards applied.

4. ZWITATAMENNDE ZWA MASHELENI ZWA NWAHA NGA NWAHA ZWA NWAHA WO FHELAHO NGA 31 THAFAMUHWE 2021

TSHITATAMENNDE TSHA VHUIMO HA MASHELENI

Zwitatamennde zwa Masheleni zwa waha nga waha zwa waha wo fhelaho nga 31 hafamuhwe 2021

	Notes	2021 R'000	2020 (Restated) R'000
Assets			
Non-current assets			
		360 533	348 912
Property and equipment	3	335 804	330 015
Intangible assets	4	7 167	1 335
Heritage assets	27	17 562	17 562
Current assets			
		380 895	271 316
Inventories	5	5	5
Trade and other receivables from exchange transactions	7	22 528	39 298
Cash and cash equivalents	8	358 362	232 013
Total assets		741 428	620 228
Net assets and liabilities			
Accumulated surplus			
		448 408	449 181
Non-current liabilities			
Post-employment benefit liabilities			
	6	11 260	9 254
Current liabilities			
		281 760	161 793
Trade and other payables	9	56 943	28 444
Deferred income	10	191 345	108 151
Accruals	11	33 472	25 199
Total net assets and liabilities		741 428	620 228

TSHITATAMENNDE TSHA KUSHUMELE KWA MASHELENI

tsha tshifhinga tsha fhelaho nga 31 Thafamuhwe 2021

	Notes	2021 R'000	2020 (Restated) R'000
Total Revenue		525 878	489 277
Revenue from exchange transactions	12	272 185	290 738
Revenue from non-exchange transactions	12	253 693	198 539
Total cost of projects		(194 862)	(165 672)
Cost of commercial projects	12	(14 932)	(22 698)
Cost of statutory projects	12	(179 930)	(142 975)
Gross surplus		331 016	323 605
Administrative expenses		(312 196)	(254 938)
Other operating expenses	12	(19 580)	(3 600)
Surplus from operations		(759)	65 067
Finance cost	13	(14)	(20)
Net deficit/surplus for the year		(773)	65 047

TSHITATAMENNDE TSHA TSHANDUKO YA NDAKA

tsha tshifhinga tsha fhelaho nga 31 Thafamuhwe 2021

	Notes	Accumulated surplus R'000	Total R'000
Opening balance at 31 March 2019		389 746	389 746
Net loss for the period		(5 611)	(5 611)
Restated balance at 31 March 2019		384 134	384 134
Net surplus for the period		60 946	60 946
Correction of prior period error	25	4 101	4 101
Restated net surplus for the period		65 047	65 047
Restated balance at 31 March 2020		449 181	449 181
Net surplus for the period		(773)	(773)
Balance at 31 March 2021		448 408	448 408

TSHITATAMENNDE TSHA NYELELO YA KHESHE

tsha tshifhinga tsha fhelaho nga 31 Thafamuhwe 2021

	Notes	2021 R'000	2020 (Restated) R'000
Cash inflow from operating activities		175 058	69 275
Cash receipts from customers		525 901	550 588
Cash paid to suppliers and employees		(363 398)	(504 622)
Cash generated from operations	14	162 503	45 966
Interest received	12	12 569	23 329
Finance cost	13	(14)	(20)
Cash outflow from investing activities		(48 710)	(90 844)
Acquisition of:			
Property and equipment	15,1	(41 912)	(93 828)
Intangible assets	15,2	(7 431)	(306)
Proceeds from sale of asset	12	29	874
Insurance proceeds for property and equipment	3,1	604	2 416
Net increase/(loss) in cash and cash equivalents		126 349	(21 569)
Cash and cash equivalents at beginning of period	8	232 013	253 582
Cash and cash equivalents at end of period	8	358 362	232 013

MBEKANYAMAITELE DZA MUVHALELANO

dza Tshitamennde tsha Nwaha nga Nwaha tsha Muvhalelano wa tsha nwaha wo gumaho nga 31
Thafamuhwe 2021

1 Accounting policies

1.1 Basis of preparation

Statement of compliance

1. The financial statements have been prepared in accordance with the Standards of Generally Recognised Accounting Practices (GRAP) including any interpretations, guidelines and directives issued by the Accounting Standards Board.

The financial statements have been prepared on a historic cost basis and accounting policies are consistent with prior years.

These annual financial statements have been prepared on a going concern basis, i.e. the assumption that the Council for Geoscience will continue to operate as a going concern for at least the next twelve months.

2. The cash flow statement has been prepared in accordance with the direct method.

3. Specific information is presented separately on the statement of financial position such as:

- (a) receivables from non-exchange transactions, including taxes and transfers;
- (b) taxes and transfers payable;
- (c) trade and other payables from non-exchange transactions.

The budget reporting standard does not apply to the Council for Geoscience as our budget is tabled as part of the Department of Mineral Resources and Energy budget.

1.2 Revenue recognition

Revenue comprises the revenue from non-exchange transactions recognised as income in the current year, contract income and sales of publications.

The Council for Geoscience measures revenue at the fair value of the consideration received or receivable. Revenue is recognised only when it is probable that the economic benefits associated with a transaction will flow to the Council for Geoscience, and the amount of revenue and associated costs incurred or to be incurred, can be measured reliably.

1.2.1 Revenue from non-exchange transactions

The Council for Geoscience receives grants in the form of a baseline allocation from the Department of Mineral Resources and Energy.

Revenue from non-exchange transactions is recorded as deferred income when it is received. It is then recognised as income proportionate to the costs incurred.

MBEKANYAMAITELE DZA MUVHALELANO

dza Tshitatamennde tsha Nwaha nga Nwaha tsha Muvhalelano wa tsha nwaha wo gumaho nga 31 Thafamuhwe 2021

1,2,2 Revenue from exchange transactions

Revenue from exchange transactions comprises sales and contract revenue as follows:

Sales revenue

Sales revenue represents the invoiced value of goods and services supplied by the Council for Geoscience. This revenue is recognised when the revenue recognition criteria are met.

Contract revenue

Revenue from contracts is recognised by means of progress payments over the duration of the contracts. Revenue from contracts in progress is recognised when the revenue criteria are met. When the outcome of a contract can be estimated reliably, revenue is recognised by referring to the stage of completion of the contract outcome.

1,3 Interest received

Interest is recognised on a time proportionate basis with reference to the principal amount receivable and the effective interest rate applicable.

1,4 Property and equipment

Property and equipment are tangible non-current assets that are held for use in the production or supply of goods or services, or for administrative purposes, and are expected to be used during more than one period.

The cost of an item of property and equipment is recognised as an asset when:

- it is probable that future economic benefits associated with the item will flow to the Council for Geoscience; and
- the cost of the item can be measured reliably.

Land and buildings were valued at initial recognition and subsequently only the building is depreciated on a straight-line method.

Costs include costs incurred initially to acquire or construct an item of property and equipment and costs incurred subsequently to add to, replace part of, or service it. If the cost of a replacement part is recognised in the carrying amount of an item of property and equipment, the carrying amount of the replaced part is derecognised.

Property and equipment are carried at cost less accumulated depreciation and any impairment losses.

Day to day expenses incurred on property and equipment are expensed directly to surplus or deficit for the period.

Where an asset is acquired at no cost, or at a nominal cost, its cost is its fair value as at date of acquisition.

Major refurbishment that meets the recognition criteria of an asset is capitalised.

MBEKANYAMAITELE DZA MUVHALELANO

dza Tshitatamennde tsha Nwaha nga Nwaha tsha Muvhalelano wa tsha nwaha wo gumaho nga 31 Thafamuhwe 2021

Depreciation is provided on all property and equipment other than freehold land, to write down the cost, less residual value, on a straight line basis over their average useful lives, as follows:

Land	Not depreciable
Buildings	30 years
Motor vehicles	5 to 10 years
Equipment	5 to 10 years
Aircraft and helicopter – body	15 years
Aircraft and helicopter – components	Useful hours as per Civil Aviation Authority
Boat	10 years
Office furniture	20 to 23 years
Computer equipment	6 to 11 years
Specialised equipment	15 years

The depreciation charges for each period are recognised in the statement of financial performance, unless it is included in the carrying amount of another asset.

The average useful lives and residual values are reviewed on an annual basis and changes are reflected as change in accounting estimates on a prospective basis.

1,5 Intangible assets

An intangible asset is recognised when:

- it is probable that the expected future economic benefits that are attributable to the asset will flow to the entity; and
- the cost of the asset can be measured reliably.

Capitalised computer software is carried at cost less accumulated amortisation and less accumulated impairment losses. Computer software is tested annually for impairment or changes in estimated future benefits. Amortisation is provided to write down the intangible assets to their residual value, on a straight-line basis, being two to eight years.

Research and development

Expenditure on research activities is recognised as an expense in the period in which it is incurred.

An internally generated intangible asset arising from research and development is recognised as part of intangible assets only if all of the following conditions are met:

- an asset is created that can be identified;
- it is probable that the asset created will generate future economic benefits;
- the development cost of the asset can be measured reliably.

Where no internally generated intangible asset can be recognised, development expenditure is recognised as an expense in the period in which it is incurred. Internally generated assets are amortised on a straight-line basis over their useful lives.

MBEKANYAMAITELE DZA MUVHALELANO

dza Tshitatamennde tsha Nwaha nga Nwaha tsha Muvhalelano wa tsha nwaha wo gumaho nga 31 Thafamuhwe 2021

1,6 Heritage assets

Heritage assets are assets held for their cultural, environmental or historical significance. Heritage assets are initially recognised at deemed cost, which has been determined, due to the nature of heritage assets, by specialist valuers. Heritage assets are reflected at deemed cost and are not depreciated. At each reporting date, heritage assets are assessed for indications of impairment. If any such indication exists, an estimate of the recoverable amount or the recoverable service amount of the heritage assets will be determined and tested against the carrying amount.

1,7 Inventories

The Council for Geoscience is a custodian of scientific information that produces publications in the form of books, maps and map explanations etc. These publications are distributed to the public for free or at a nominal charge.

Inventories are initially measured at deemed costs (fair value).

1,8 Translation of foreign currencies

Foreign currency transactions

A foreign currency transaction is recorded, on initial recognition in Rands, by applying to the foreign currency amount the spot exchange rate between the Rand and the foreign currency at the date of the transaction.

At each balance sheet date:

- foreign currency monetary items are translated using the closing rate.

Exchange differences arising on the settlement of monetary items or on translating monetary items at rates different from those at which they were translated on initial recognition during the period or in previous annual financial statements are recognised in the statement of financial performance in the period in which they arise.

Cash flows arising from transactions in a foreign currency are recorded in Rands by applying to the foreign currency amount the exchange rate between the Rand and the foreign currency at the date of the cash flow.

1,9 Deferred income

Deferred Income is accounted for in the statement of financial position. The related revenue is recognised on an accrual basis in the statement of financial performance in the period in which it satisfies the revenue recognition criteria.

1,10 Retirement benefit costs

Short-term employee benefits

The cost of short-term employee benefits (those payable within twelve months after the service is rendered, such as bonuses, paid vacation leave and sick leave) is recognised in the period in which the service is rendered and is not discounted.

The expected cost of compensated absences is recognised as an expense as the employees render services that increase their entitlement or, in the case of non-accumulating absences, when the absence occurs.

MBEKANYAMAITELE DZA MUVHALELANO

dza Tshitamennde tsha Nwaha nga Nwaha tsha Muvhalelano wa tsha nwaha wo gumaho nga 31
Thafamuhwe 2021

Defined contribution and defined benefit plans

The Council for Geoscience operates both a defined contribution pension and provident fund and a defined benefit plan in respect of post-retirement medical-aid contributions. For the defined benefit plan, the defined benefit obligation and the related current service cost, is determined by using the projected unit credit method. The defined benefit plan is subject to an annual actuarial valuation. The qualifying plan asset of this scheme is held and administered by Momentum Group Limited.

The actuarial gains or losses are further limited to the extent that the net cumulative unrecognised actuarial gains or losses (before recognition of that actuarial gain or loss) exceed the unrecognised part of the transactional liability. Payments to defined contribution retirement benefit plans are charged to the statement of financial performance in the year to which they relate.

1,11 Provisions and contingent liabilities

Provisions are recognised when:

- the entity has a present obligation as a result of a past event;
- it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation; and
- a reliable estimate can be made of the obligation.

The amount of a provision is the present value of the expenditure expected to be required to settle the obligation.

Commitments

The Council for Geoscience classifies commitments as contracted future transactions that are non-cancellable or only cancellable at significant cost, and that will normally result in the outflow of cash. This excludes steady routine transactions such as salary commitments relating to employment contracts or social security benefits.

A distinction is made between operational and capital commitments.

Disclosure is made of the aggregate amount of operational and capital expenditure contracted for at the reporting date, to the extent that the amount has not been recorded in the financial statements.

If a commitment is for a period longer than a year, it is stated in the note to the commitments.

Disclosure of expenditure that has been approved, but that has not yet been contracted for, is made.

1,12 Financial instruments

Initial recognition

The entity classifies financial instruments, or their component parts, on initial recognition as a financial asset, a financial liability or an equity instrument in accordance with the substance of the contractual arrangement.

Financial assets and liabilities are recognised on the entity's statement of financial position when the Council for Geoscience becomes party to the contractual provisions of the instrument.

Financial assets and liabilities are recognised initially at fair value.

MBEKANYAMAITELE DZA MUVHALELANO

dza Tshitamennde tsha Nwaha nga Nwaha tsha Muvhalelano wa tsha nwaha wo gumaho nga 31
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Derecognition of financial instruments

The entity derecognises a financial asset only when the contractual rights to the cash flows from the asset expire, or it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity.

The entity derecognises financial liabilities when the entity's obligations are discharged, cancelled or they expire.

Impairment of loans and receivables

Financial assets are assessed for indicators of impairment at each balance sheet date. Financial assets are impaired where there is objective evidence that, as a result of one or more events that occurred after the initial recognition of the financial asset, the estimated future cash flows of the investment have been impacted.

The carrying amount of trade receivables is reduced through the use of an allowance account (bad debt provision). When a trade receivable is considered uncollectible, it is written off against the allowance account. Subsequent recoveries of amounts previously written off are credited against the allowance account. Changes in the carrying amount of the allowance account are recognised in surplus or deficit.

Fair values of trade and other payables are determined at a price charged at transaction date and impaired when indicators of impairment are present. At period end there were no differences between the book value and the fair values of trade and other payables.

Fair value of trade and other receivables

Fair values of trade and other receivables are determined at a price charged at transaction date and impaired when indicators of impairment are present. At period end there were no differences between the book value and the fair values of trade and other receivables because of the short-term maturity.

Financial assets carried at amortised cost

Loans and receivables are measured at amortised cost less any impairment losses recognised to reflect irrecoverable amounts. Impairment is determined on a specific basis, whereby each asset is individually evaluated for impairment indicators. Write-offs of these assets are expensed in surplus or deficit.

Cash and cash equivalents

Cash and cash equivalents are short-term, highly liquid investments that are readily convertible to known amounts of cash. Cash and cash equivalents are measured at fair value.

Financial liabilities carried at amortised cost

Trade and other payables are initially measured at fair value and are subsequently measured at amortised cost.

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1,13 Operating leases

Leases of assets under which all the risks and rewards of ownership are effectively retained by the lessor are classified as operating leases. Lease payments under an operating lease are recognised as an expense on a straight-line basis over the lease term.

Any contingent rents are expensed in the period they are incurred.

1,14 Impairment

The Council for Geoscience identifies cash generating assets as assets that are managed with the objective of generating a commercial return, and non-cash generating assets as assets that do not generate market related cash flows from that asset .

The entity assesses at each balance sheet date whether there is any indication that an asset may be impaired. If there is any indication that an asset may be impaired, the recoverable amount is estimated for the individual asset. The recoverable amount of an asset is the higher of fair value less assumed costs to sell and its value in use.

If the recoverable amount of an asset is less than its carrying amount, the carrying amount of the asset is reduced to its recoverable amount. That reduction is an impairment loss recognised immediately in surplus or deficit.

At each reporting date the entity assesses impairment losses recognised in prior years for continued existence or decreases. If such indication exists, the recoverable amounts of those assets are estimated. The increase in the carrying amount of an asset attributable to a reversal of an impairment loss does not exceed the carrying amount that would have been determined had no impairment loss been recognised for the asset in prior periods. A reversal of an impairment loss of assets carried at cost less accumulated depreciation or amortisation is recognised immediately in surplus or deficit.

1,15 Critical accounting estimates and judgements

Provision for bad debts

Past experience indicates a reduced prospect of collecting debtors over the age of four months. Debtor balances are regularly assessed by management and provided for in line with the policy.

Provisions

Provisions were raised and management determined an estimate based on the information available and in line with the policy.

Property and equipment

Management has made certain estimations with regard to the determination of estimated useful lives and residual values of items of property and equipment.

Leases

Management has applied its judgement to classify all lease agreements that the entity is party to as operating leases, as they do not transfer substantially all risks and ownership to the entity. Furthermore, as the operating lease in respect of premises is only for a relatively short period of time, management has made a judgement that it would not be meaningful to classify the lease into separate components for the land and for the buildings for the Polokwane office current lease, and the agreement will be classified in its entirety as an operating lease.

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1,16 Sources of estimation uncertainty

There are no key assumptions concerning the future and other key sources of estimation uncertainty at the balance sheet date that could have a significant risk of causing material adjustment to the carrying amounts of assets and liabilities within the next financial year.

1,17 Irregular expenditure

Irregular expenditure is recorded in the notes to the financial statements when confirmed. The amount recorded is equal to the value of the irregular expenditure incurred, unless it is impractical to determine, in which case reasons therefore must be provided in the notes. Irregular expenditure receivables are measured at the amount that is expected to be recovered and are de-recognised when settled or written-off as irrecoverable.

1,18 Fruitless and Wasteful Expenditure

Fruitless and Wasteful Expenditure is expenditure that was made in vain and would have been avoided had reasonable care been exercised. Fruitless and wasteful expenditure where identified is accounted for in the related year. The expenditure is accordingly classified with its nature, and where subsequently recovered, it is accounted for as income in surplus or deficit.

1,19 Post-reporting date events

Events after the reporting date are those events, both favourable and unfavourable, that occur between the reporting date and the date when the financial statements are authorised for issue. Two types of events can be identified:

- Those that provide evidence of conditions that existed at the reporting date (adjusting events after the reporting date)
- Those that are indicative of conditions that arose after the reporting date (non-adjusting events after the reporting date).

The Council for Geoscience will adjust the amounts recognised in the financial statements to reflect adjusting events after the reporting date once the event occurred.

The Council for Geoscience will disclose the nature of the event and estimate its financial effect or a statement that such estimate cannot be made in respect of all material non-adjusting events, where nondisclosure could influence the economic decisions of users taken on the basis of the financial statements.

1,20 Related party transactions

Individuals as well as their close family members, and/or entities are related parties if one party has the ability, directly or indirectly, to control or jointly control the other party or exercise significant influence over the other party in making financial and/or operating decisions. Management is regarded as a related party and comprises the Board Members and Senior management. Related party transfers/ payments of appropriated funds, specific-purpose allocations, etc. would generally fall under the disclosure exemption in GRAP 20, and such transfers and allocations are therefore part of the normal supplier and/or client/recipient relationships and are therefore not disclosed.

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2 New standards and interpretations

2.1 2.1 Standards and interpretations issued, but not yet effective

The Council for Geoscience has not applied the following standards and interpretations, which have been approved but are not yet effective for accounting periods 2020/2021:

GRAP statement	Description	Impact	Effective date
GRAP 25	Employee Benefits	None	To be determined
GRAP 104	Financial instruments (revised)	None	To be determined

3 Property and equipment

2021	Land	Buildings and Fixtures	*Equipment	Office furniture	Aircraft and Boat	Motor vehicles	Computer equipment	Total
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Gross carrying amount	18 231	210 421	196 458	13 325	23 555	26 900	54 176	543 066
Accumulated depreciation at the beginning of the period	(1 600)	(68 618)	(99 302)	(8 744)	(9 284)	(13 058)	(12 445)	(213 051)
Opening net carrying amount at 31 March 2021	16 631	141 803	97 156	4 581	14 271	13 842	41 731	330 015
Movements during the period:								
Work in progress (refer to note 3.2)	-	24 665	(27 167)	-	(1 282)	-	(6 032)	(9 816)
Acquisitions	-	-	33 269	982	2 585	-	14 990	51 826
Reversal of impairment	-	315	-	-	-	-	-	315
Disposals	-	-	(10)	(40)	-	(1)	(119)	(170)
Disposals - Cost	-	-	(102)	(181)	-	(1)	(199)	(483)
Disposals - Depreciation	-	-	92	141	-	-	80	313
Depreciation	-	(6 341)	(22 494)	(720)	(507)	(2 605)	(3 699)	(36 366)
Closing net carrying amount at 31 March 2020	16 631	160 442	80 755	4 803	15 067	11 236	46 870	335 804
Gross carrying amount	18 231	235 086	202 459	14 126	24 859	26 899	62 934	584 593
Accumulated depreciation/impairment	(1 600)	(74 644)	(121 704)	(9 322)	(9 792)	(15 663)	(16 064)	(248 789)

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3 Property and equipment (continued)

Property and equipment (continued)

2020	Land	Buildings and Fixtures	*Equipment	Office furniture	Aircraft and Boat	Motor vehicles	Computer equipment	Total
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Gross carrying amount	18 231	195 082	166 001	13 315	22 348	29 264	20 552	464 793
Accumulated depreciation at the beginning of the period	(1 960)	(65 334)	(90 541)	(8 382)	(10 286)	(13 695)	(14 543)	(204 741)
Opening net carrying amount at 31 March 2019	16 271	129 748	75 460	4 933	12 062	15 569	6 009	260 052
Movements during the period:								-
Work in progress (refer to note 3.2)	-	14 854	27 045	-	1 282	-	29 810	72 991
Reversal of impairment	360	2 881	-	-	-	-	-	3 241
Acquisitions	-	485	10 718	356	-	872	8 406	20 837
Disposals	-	-	(2 221)	(82)	(7)	(524)	(348)	(3 182)
Disposals - Cost	-	-	(7 306)	(346)	(75)	(3 236)	(4 592)	(15 555)
Disposals - Depreciation	-	-	5 085	264	68	2 712	4 244	12 373
Adjustments	-	-	-	-	1 036	-	-	1 036
Depreciation	-	(6 165)	(13 846)	(626)	(102)	(2 075)	(2 146)	(24 960)
Closing net carrying amount at 31 March 2020	16 631	141 803	97 156	4 581	14 271	13 842	41 731	330 015
Gross carrying amount	18 231	210 421	196 458	13 325	23 555	26 900	54 176	543 066
Accumulated depreciation/ impairment	(1 600)	(68 618)	(99 302)	(8 744)	(9 284)	(13 058)	(12 445)	(213 051)

* Equipment in the tables above include the following categories of equipment: Specialised Equipment, Audio & Visual, Technical Equipment, Office Equipment and Scientific Equipment

The transfer of the following land and buildings as stipulated under section 26 of the Geoscience Act (Act No. 100 of 1993) has not yet been completed.

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3 Property and equipment (continued)

Location	Fair value at date of transfer R'000
474 Carl Street, Town Lands 351JR, Pretoria West	R2 800
280 Pretoria Street, Silverton, Pretoria	R94 000

The value of these properties has been included in the carrying amount of land and buildings as at 31 March 2020 and was determined by an independent valuator.

Details regarding land and buildings are kept at the Council for Geoscience head office and will be supplied upon written request.

	2021 R'000	2020 R'000
3.1 Compensation from third parties for property and equipment lost		
Proceeds from insurance	604	2 416

3.2 Property and equipment in the process of being constructed

Cumulative expenditure recognised in the carrying value of property and equipment being developed/constructed

	Buildings and Fixtures R'000	*Equipment R'000	Aircraft and Boat R'000	Total R'000
Gross carrying amount	46 916	57 132	2 322	106 370
Opening net carrying amount at 31 March 2019	46 916	57 132	2 322	106 370
Movement	24 665	(33 199)	(1 282)	(9 816)
Closing net carrying amount at 31 March 2020	71 581	23 933	1 040	96 555

Property and equipment in the process of being constructed with delays

Included in the work in progress for buildings and fixtures is a carrying amount of R36,649m in respect of a ventilation system in the Silverton building that has been delayed.

	Buildings and Fixtures R'000
Gross carrying amount	36 649
Opening net carrying amount at 31 March 2020	36 649
Movement	22 944
Closing net carrying amount at 31 March 2021	59 593

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3	Property and equipment (continued)	2021	2020
		R'000	R'000
3,3	Property and equipment continued		
	Repairs and maintenance expenditure incurred for the year to repair and maintain property and equipment		
	Repairs and maintenance		
	Land and Buildings	4 751	2 931
	Office Equipment and Furniture	4	27
	Technical and Scientific Equipment	2 482	1 947
	Specialised Equipment	-	-
	Computer Equipment	163	99
	Aircraft	127	777
		<u>7 527</u>	<u>5 781</u>
4	Intangible assets		
	Computer software		
	Gross carrying amount	9 501	9 865
	Accumulated amortisation	(8 166)	(8 310)
	Opening net carrying amount at 31 March 2020	1 335	1 555
	Movements during the period:		
	Acquisitions	7 333	306
	Disposals	-	(2)
	Disposals - Cost	-	(671)
	Disposals - Amortisation	-	669
	Amortisation	(1 501)	(526)
	Closing net carrying amount at 31 March 2021	7 167	1 335
	Gross carrying amount	16 833	9 501
	Accumulated amortisation	(9 666)	(8 166)
5	Inventories		
	Publication inventories	5	5
6	Retirement benefit		
6,1	Post-retirement medical-aid fund (PRM)		
	The Council for Geoscience has made provision for the medical-aid fund covering all its qualifying employees. All eligible employees are members of the defined benefit scheme. To improve management of this defined benefit scheme the Council for Geoscience established a qualifying plan asset in October 2010 which is held and administered by Momentum Group Limited and evaluated annually as at 31 March.		

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6 Retirement benefit (continued)

2021
R'000

2020
R'000

The amount recognised in the statement of financial performance is determined as follows:

Current service costs	37	48
Interest charge	2 562	2 074
Expected return on planned assets	(1 541)	(1 517)
Actuarial (gain)/loss recognised	949	3 947
Recognition of loss on asset realisation	(1)	(2 959)
	2 006	1 593

The amount included in the statement of financial position arising from Council for Geoscience obligation in respect of PRM is as follows:

	2021	2020	2019	2018	2017
Present value of fund obligations	26 070	24 348	(15 094)	25 565	23 084
Fair value of planned assets	(14 810)	(15 094)	8 035	(17 530)	(15 034)
Liability recognised in statement of financial position	11 260	9 254	(7 059)	8 035	8 050

Movement in net liability during the period is as follows:

	2021			2020		
	Liability	Planned asset	Net	Liability	Planned asset	Net
Liability at beginning of period	24 348	-	24 348	24 214	-	24 214
Value of planned assets at beginning of period	-	(15 094)	(15 094)	-	(16 553)	(16 553)
	24 348	(15 094)	9 254	24 214	(16 553)	7 661
Interest charge/expected return of planned asset	2 562	(1 541)	1 021	2 074	(1 517)	557
Contributions received	-	(1)	(1)	-	(2 959)	(2 959)
Current service costs	37	-	37	48	-	48
Benefits paid	(2 311)	2 311	-	(2 179)	2 179	-
Actuarial (gain)/loss	1 434	(485)	949	191	3 756	3 947
Closing balance	26 070	(14 810)	11 260	24 348	(15 094)	9 254

Contributions expected to be paid

Top up payments are expected to be made during the 2022 financial year

Expected rate of return on assets 9,43%

Assumptions

Discount rates 9,43%

Basis of discount rates: JSE zero coupon bond yield after the market closed on 31 March 2021

Return on assets 9,43%

Expected salary increases 5,00%

Health care cost inflation rate 7,35%

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6 Retirement benefit (continued)

Sensitivity analysis-on accrued liability (R Millions) for the year ending 31 March 2021

Assumption	Change	In service	Continuation	Total	Change
Central assumptions	-	2,123	23,947	26,070	-
Health care inflation	1%	2,465	25,795	28,260	8%
	-1%	1,842	22,296	24,138	-7%
Discount rate	1%	1,849	22,339	24,188	-7%
	-1%	2,462	25,776	28,238	8%
Post retirement mortality	-1 year	2,193	25,005	27,198	4%
Average retirement date	-1 year	2,161	23,947	26,108	0%
Continuation of membership at retirement	-10%	1,912	23,947	25,859	-1%

The table above indicates, for example that if medical inflation is 1% greater than the long-term assumptions made, the liability will be 8% higher than that shown.

Sensitivity analysis for current service and interest cost (R Millions) for the year ending 31 March 2021

Assumption	Change	Current service	Interest cost	Total	Change
Central assumptions	-	36 700	2 554 900	2 591 600	-
Health care inflation	1%	43 800	2 768 600	2 812 400	9%
	-1%	30 900	2 365 400	2 396 300	-8%
Discount rate	1%	31 100	2 588 000	2 619 100	1%
	-1%	43 700	2 512 600	2 556 300	-1%
Post retirement mortality	-1 year	37 700	2 658 900	2 696 600	4%
Average retirement date	-1 year	40 600	2 567 100	2 607 700	1%
Continuation of membership at retirement	-10%	33 100	2 534 900	2 568 000	-1%

The table above indicates, for example, that if medical inflation is 1% greater than the long-term assumptions made, the liability will be 9% higher than that shown.

6,2 Pension and provident fund benefits

The Council for Geoscience and its employees contribute to a defined contribution plan. The assets of the scheme are held separately from the Council for Geoscience in funds under the control of trustees. The total cost charged to income of R15,591m (2020: R13,994m) represents equal contributions of 7.5% by the employer and employee.

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	2021 R'000	2020 R'000
7 Trade and other receivables from exchange transactions		
Trade receivables	5 503	1 024
Contract customers	9 006	32 544
Other receivables	10 044	7 778
	<u>24 554</u>	<u>41 345</u>
Less - Provision for bad debts	(2 026)	(2 047)
	<u>22 528</u>	<u>39 298</u>
Provision for bad debts		
Opening balance	2 047	2 175
Movement	(21)	(128)
Closing balance	<u>2 026</u>	<u>2 047</u>
Analysis of Impairment		
Long overdue debtors considered impaired	2 026	2 047
	<u>2 026</u>	<u>2 047</u>

There is no difference between the fair value of trade and other receivables and their book value.

8 Cash and cash equivalents		
Cash and cash equivalents at the end of the period are represented by the following balances:		
Cash at bank	26 800	24 197
Call accounts	331 562	207 816
	<u>358 362</u>	<u>232 013</u>
Cash and cash equivalents at the end of the period are represented by the following balances:		
	<u>358 362</u>	<u>232 013</u>

There is no difference between the fair value of cash and cash equivalents and their book value.

9 Trade and other payables		
Trade payables	21 673	8 324
Other payables	35 270	20 120
	<u>56 943</u>	<u>28 444</u>

There is no difference between the fair value of trade payables and their book value.

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	2021 R'000	2020 R'000
10 Deferred income		
Exchange revenue		
10,1 Deferred income arising as a result of an agreement entered into with the Department of Science and Innovation to develop an intellectual property management office. (Geoscience Act par 5(1)(g))		
Carrying amount at the beginning of period	2 609	3 264
Amounts used during the period	(2)	(655)
Carrying amount at the end of period	2 607	2 609
10,2 Deferred income arising as a result of an agreement with the Organisation of African Geological Surveys.		
Carrying amount at the beginning of period	248	48
Amounts received	45	200
Carrying amount at the end of period	293	248
10,3 Deferred income arising as a result of an agreement with the Department of Science and Innovation for the environmentally friendly and efficient methods for the extraction of Rare Earth Elements.		
Carrying amount at the beginning of period	182	182
Amounts used during the period	(182)	-
Carrying amount at the end of period	-	182
10,4 Deferred income arising as a result of an agreement entered into with the National Research Foundation.		
Carrying amount at the beginning of period	110	110
Carrying amount at the end of period	110	110
10,5 Deferred income arising as a result of Carbon Capture, Utilization and Storage (CCUS)		
Carrying amount at the beginning of period	-	-
Amounts received	90 000	-
Amounts used during the period	(8 182)	-
Carrying amount at the end of period	81 818	-

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10	Deferred income (continued)	2021 R'000	2020 R'000
10,6	Deferred income arising as a result of an agreement entered into with the Department of Mineral Resources & Energy to develop and implement various measures to mitigate the effect of mining-induced contamination.		
	Carrying amount at the beginning of period	105 002	217 756
	Amounts received	248 537	215 523
	Amounts used during the period	(247 021)	(328 277)
	Carrying amount at the end of period	106 518	105 002
	Total deferred income	<u>191 345</u>	<u>108 151</u>
11	Accruals		
	Accruals for leave pay		
	Carrying amount at the beginning of period	19 804	18 983
	Provision current period	9 133	2 839
	Amounts used during the current period	(1 721)	(2 018)
	Carrying amount at the end of period	<u>27 216</u>	<u>19 804</u>
	The leave pay provision relates to the estimated liabilities as a result of leave days due to employees.		
	Accruals for 13th cheque		
	Carrying amount at the beginning of period	5 395	6 130
	Provision current period	861	(735)
	Carrying amount at the end of period	<u>6 256</u>	<u>5 395</u>
	The 13th cheque accrual relates to the structuring of the employee costs to company and is paid out on employees' birthdays.		
	Total accruals	<u>33 472</u>	<u>25 199</u>

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	2021 R'000	2020 R'000
12 Surplus/Deficit from operations		
Operating surplus/deficit is arrived at after taking the following items into account:		
Revenue	525 878	489 277
Non-exchange revenue		
Total grant received	502 230	414 062
Project related revenue	(248 537)	(215 523)
Total non-exchange revenue	253 693	198 539
Exchange revenue		
Department of Mineral Resources & Energy project related revenue	224 351	225 051
Contracting revenue	19 872	27 689
Publication revenue	3 337	3 276
Carbon Capture, Utilization and Storage (CCUS)	8 182	-
	255 742	256 016
Other exchange revenue		
Foreign currency gains	627	835
Proceeds from sale of asset	29	874
Recovery of asset losses	604	2 416
Sundry income	2 908	6 863
	4 168	10 988
Interest received		
- Interest income on call accounts	8 345	17 100
- *Interest income on current accounts	3 930	6 634
(* includes interest accrued to the amount of R299 699)	12 275	23 734
Total exchange revenue	272 185	290 738
Total cost of contracts	194 862	165 673
Cost of commercial projects		
Direct cost	5 710	10 613
Personnel expenditure	9 222	12 085
	14 932	22 698

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12 Surplus/Deficit from operations (continued)	2021 R'000	2020 R'000
Cost of statutory projects		
Direct cost	51 789	35 302
Personnel expenditure	128 141	107 673
	179 930	142 975
Administrative expenses include:		
Audit fees	2 872	3 820
- Current period	1 786	2 084
- Internal audit	955	1 736
- Fee for other services	131	-
Bad debts written off	-	-
Provision for bad debts	(21)	(2 047)
Depreciation - on owned assets	36 366	23 924
- Buildings	6 341	6 165
- Equipment	22 494	13 846
- Office furniture	719	626
- Motor vehicles	2 605	2 075
- Aircraft	354	102
- Aircraft adjustment	-	(1 036)
- Boat	154	-
- Computer equipment	3 699	2 146
Reversal of impairment	315	3 241
Amortisation - intangible assets		
- Computer software	1 501	526
Rentals in respect of operating leases		
- Land and buildings	843	1 044
- Multifunctional printers	855	1 400
Other operating expenses		
Net loss on disposal of equipment	10	2 221
Net loss on disposal of vehicles	-	524
Net loss on disposal of intangible assets	-	2
Net loss on disposal of computer equipment	120	348
Net loss on disposal of office furniture	40	83
Net loss on disposal of aircraft	-	7
Write-off work in progress-HVAC	18 496	-
Foreign currency losses	914	415
	19 580	3 600

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12 Surplus/Deficit from operations (continued)

	2021 R'000	2020 R'000
Staff costs	337 293	280 074
Included in staff costs are:		
Defined benefit plan expense for the post-retirement medical-aid fund	2 006	1 593
- Current service cost	37	48
- Interest cost	2 562	2 074
- Expected return on plan assets	(1 541)	(1 517)
- Recognised actuarial (gain)/loss	949	3 947
- Recognition of loss on asset realisation	(1)	(2 959)
Defined contribution plan expenses for the pension and provident fund	15 591	13 994

Emoluments

Senior management	2020/2021				
	Pensionable salary	Performance bonus	Provident/ Pension fund contributions	*Other contributions	Total
	R'000	R'000	R'000	R'000	R'000
Mr Mabuza M	3 114	334	188	678	4 314
Mr Matsepe L D	2 577	298	157	552	3 584
Ms Shelembe P R	1 941	236	127	437	2 741
Dr Tshipa J	2 057	238	123	457	2 875
Dr Khoza T D	1 949	233	119	427	2 728

	2019/2020				
	Pensionable salary	Performance bonus	Provident/ Pension fund contributions	*Other contributions	Total
	R'000	R'000	R'000	R'000	R'000
Mr Mabuza M	2 736	-	167	561	3 464
Mr Matsepe L D	2 455	-	150	550	3 155
Ms Shelembe P R	1 849	-	121	423	2 393
Dr Tshipa J	1 959	-	118	298	2 375
Dr Khoza T D	1 857	-	113	391	2 361

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12	Surplus/Deficit from operations (continued)	2021	2020
	Board emoluments	R'000	R'000
	Non-executive Board Members		
	Dr Mathe H	176	120
	Dr Mahachi J	107	139
	Mr Koloji K	-	55
	Mr Ramokgopa K	-	23
	Mr Mvinjelwa X	129	68
	Mr Mokoena S	131	-
	Adv Maake N	113	-
	Ms Chowan A	150	-
	Dr Mirembe J	-	-
	Dr Mayekiso M	-	-
	Dr Khumalo T	-	-
	Ms Malie S	-	-
	Mr Malaza S	-	-
	Mr Abader I	-	-
	Mr Nel P	-	-
	Ms Mdubeki R	-	-
	Mr Menoe K	-	-
	Ms Mochothli D	-	-
	Ms Tsotetsi P	-	-
	Ms Madiba L	-	-
	Mr Wilcox O	-	-
	Mr Moatshe A	-	-
	Mr Gerrys B	-	-
		806	405
	* Other contributions relate to employer contributions towards statutory deductions and leave.		
13	Finance cost		
	Finance cost on motor vehicle fleet cards.	14	20

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	2021 R'000	2020 R'000
14 Reconciliation of net surplus/(loss)for the period to cash generated from operations		
Net surplus for the period	(773)	65 047
Interest	14	20
Depreciation on property and equipment	36 366	23 924
Amortisation - intangible assets	1 501	526
Reversal of impairment of assets	(315)	(3 241)
Proceeds from sale of assets	(29)	(874)
Compensation from third parties for property and equipment lost	(604)	(2 417)
Net loss on disposal of fixed assets	170	3 182
Interest earned	(12 569)	(23 329)
Provision for post-retirement medical-aid benefits	2 006	1 592
Operating cash flows before working capital changes	25 767	64 430
Working capital changes:		
Increase in provision for accumulated leave pay and 13th cheque	8 273	87
(Increase)/Decrease in trade and other receivables	16 770	94 898
Increase/(Decrease) in trade and other payables	28 499	(1 019)
Increase/(Decrease) in deferred income	83 194	(112 430)
Cash generated from operations (including finance costs)	162 503	45 966
15 Acquisition of:		
15,1 Property and equipment		
Land and buildings	-	485
Equipment	33 269	10 718
Office furniture	982	356
Aircraft and boat	2 585	-
Motor vehicles	-	872
Computer equipment	14 990	8 406
	51 826	20 837
<u>Work in progress - Acquisitions</u>		
Land and buildings	24 665	14 854
Computer equipment	(6 032)	29 810
Equipment	(27 167)	27 045
Aircraft and boat	(1 282)	1 282
	(9 816)	72 991
Total acquisitions	42 010	93 828
15,2 Intangible assets		
Computer software	7 333	306
	7 333	306

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	2021 R'000	2020 R'000
16 Contingent liability		
16,1 Bank guarantees		
Performance bonds and bid bonds issued for contract work to various financial institutions.	-	1 927
	-	1 927
16,2 Pending legal action		
The Council for Geoscience has an estimated legal liability due to pending labour cases.	-	-
	-	-
17 Taxation		
No provision for income tax was made as the Council for Geoscience is exempted in terms of section 10(1)(Ca)(i) of the Income Tax Act.		
18 Operating lease commitments		
18,1 Lease of office space		
The operating lease between a supplier and the Council for Geoscience entered into from 01 December 2017 to 30 November 2023.		
At reporting date, the outstanding commitments under non-cancellable operating leases, which fall due are as follows:		
Up to 1 year	674	385
2 to 5 years	1 209	-
Total lease commitments	1 883	385
18,2 Lease of office printing equipment		
The operating lease between a supplier and the Council for Geoscience entered into from 01 October 2015 to 31 May 2021.		
At the reporting date, the outstanding commitments under non-cancellable operating leases, which fall due are as follows:		
Up to 1 year	792	1 121
Total lease commitments	792	1 121

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18 Operating lease commitments (continued)	2021	2020
	R'000	R'000
18,3 Commitments		
Operating expenditure		
Approved and contracted	42 719	29 274
Approved but not yet contracted	13 170	-
Capital expenditure		
Approved and contracted: Property and equipment	55 234	69 701
Approved but not yet contracted: Property and equipment	10 281	1 548
Total commitments	<u>121 404</u>	<u>100 523</u>
Commitments		
Up to 1 year	51 793	52 950
2 to 5 years	69 611	47 573
Total commitments	<u>121 404</u>	<u>100 523</u>
The Council for Geoscience has usage based contracts for the provision of the following services		
- Sampling Services Geophysics		
- Accommodation and travel		
- Courier services		

19 Financial instruments

Financial instruments consist of cash and cash equivalents, investments with financial institutions, trade and other receivables and trade and other payables.

19,1 Credit risk

Financial assets, which potentially subject the Council for Geoscience to concentrations of credit risk, consist principally of cash, short-term deposits and trade receivables. The Council for Geoscience's cash equivalents and short-term deposits are placed with high credit quality financial institutions. Trade receivables are presented net of the allowance for doubtful debts. Credit risk with respect to trade receivables is limited due to the large number of customers being dispersed across different industries and geographical areas. Accordingly the Council for Geoscience has no significant concentration of credit risk.

The carrying amounts of financial assets included in the statement of financial position represent the Council for Geoscience's exposure to credit risk in relation to those assets.

Trade and other receivables are controlled by well-established policies and procedures which are reviewed and updated on an on-going basis. The Council for Geoscience does not have any significant exposure to any individual customer or counterparty.

Trade receivables and other payables are carried at amortised costs. Refer to notes 7 and 9.

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19,2 Interest rate risk

The organisation's exposure to interest rate risk and the effective interest rates on the financial instruments at reporting date are: 31 March 2021

	Weighted average effective interest rate	Weighted average effective interest rate
	%	%
Assets		
Cash	1,00%	3,90%
Call accounts	3,64%	6,87%

Short-term deposits

The risk is perceived to be low due to the following factors:

- Funds are only invested with approved financial institutions according to the policy of the Council for Geoscience.
- Short-term deposits are only reinvested or invested with Management approval.

19,3 Foreign currency risk

The Council for Geoscience undertakes certain transactions denominated in foreign currencies, hence exposures to exchange rate fluctuations arise. It is not policy for the Council for Geoscience to take out cover on these outstanding foreign currency transactions due to the fact that these transactions take place on an ad-hoc basis. The Council for Geoscience exposure at 31 March 2021 is disclosed in note 20.

19,4 Airborne operations risk

It is the policy of the Council for Geoscience to transfer risk in respect of airborne operations to third parties, namely insurance and an external operator.

20 Foreign currency exposure

	2021 '000			2020 '000		
	Exchange rate	Foreign amount	R-value	Exchange rate	Foreign amount	R-value
20,1 Trade receivables						
Foreign currency US\$	R 14,563	\$28	404	R 17,626	\$34	596
20,2 Banks						
Foreign funds Euro	R 17,069	€ 240	4 097	R 16,026	€ 240	3 846

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	2021 R'000	2020 R'000
21 Related-party transactions		
During the period, the following related-party transactions took place between the Council for Geoscience and the Department of Mineral Resources & Energy:		
Total grant received	502 230	414 062
Refer to note 10 for further details regarding transactions with the Department of Mineral Resources & Energy.		
All other related-party transactions were concluded at arm's length.		
Relationships:		
Parent National Department: Department of Mineral Resources & Energy		
Other Government Departments and Entities: South African National Energy Development Institute	90 000	-
The Council for Geoscience has been appointed as the implementing agency of the agency of the Carbon Capture, Utilization and Storage (CCUS) project. The Director General of Minerals and Energy requested South African Nation Energy Development Institute (SANEDI) to transfer the MTEF funding allocations that were made available for the Carbon Capture, Storage and Utilisation project to the CGS.		
Refer to note 10 for further details regarding transactions with South African Energy Development Institute.		
22 Irregular expenditure		
Opening balance	-	-
Irregular expenses identified in the current year	1 695	-
Expenditure condoned	-	-
	1 695	-
Details of irregular expenditure identified in the current year		
Non-compliance with National Treasury's instruction note 5 of 2020/2021 'EMERGENCY PROCURMENT IN REPSONSE TO NATIONAL STATE OF DISASTER'. National Treasury Practice note number 5 was repealed by National Treasury Practice note number 11 with effect from 1 September 2020. The contract variation of 25% for internet services was concluded after the instruction note 5 of 2020/2021 was repealed on 26 August 2020. No loss has been incurred as services were rendered. National Treasury condoned the irregular expenditure on 30 April 2021.	1 695	-
	1 695	-

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23 Fruitless and Wasteful expenditure

Opening balance	-	-
fruitless and wasteful expenditure identified in the current year	18 496	-
Less: Amount resolved	-	-
Less: Amount transferred to receivables	-	-
	<u>18 496</u>	<u>-</u>

Determination

"Fruitless and wasteful expenditure was identified in regards to the implementation of the Humidity, ventilation and airconditioning (HVAC) system up to 2017. The work was found to be technically not acceptable and needed remediation. Management remains committed to eliminate and avoid any fruitless and wasteful expenditure.

Investigation

The Council for Geoscience has commenced with investigative procedures to recover the loss.

24 Events after reporting date

Non-Adjusting events

Eminent acquisition of significant assets

Acquisition of drilling capacity in support of the Geoscience program, in particular the Geological mapping for the exploration of mining has commenced. The estimated cost for this acquisition is at R50 million

The Geoscience Act regulations,

The Geoscience Act regulations, which aims to provide clarity and give effect to the principal Acts (the Geoscience Act No 100 of 1993 and the Geoscience Amendment Act No 16 of 2010), from which CGS derives its mandate to be the custodian and curator of all geoscience information in South Africa, were gazetted for public comment. Responses received from the wider geoscientific community are being considered.

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25 Correction of prior year error

Nature	Period	2021 R'000	2020 R'000
A correction was made to the financial statements on vat expenditure that was not recognised in the period to which it relates.	31-Mar-20	5 149	-
A correction was made to payables in the prior period relating to the allocation of payments .	31-Mar-20	(3 100)	-
A correction was made to the financial statements on other income that was not recognised in the period to which it relates.	31-Mar-20	(2 882)	(279)
A correction was made to the financial statements to depreciation/amortisation for prior period.	31-Mar-20	(2 383)	-
A correction was made to the financial statement to prepaid expenses for the prior period.	31-Mar-19	-	(397)
A allocation correction was made from expenditure and capitalised.	31-Mar-19	(65)	(2)
A correction was made to expenditure that was not recognised in the correct period. .	31-Mar-20	12	5 203
An adjustment was made to payables in the prior period relating to a construction project retention.	31-Mar-20	(637)	-
An adjustment was made to deferred income in the prior period relating to a construction project retention.	31-Mar-20	(197)	-
		<u>(4 101)</u>	<u>4 525</u>

Effect

Statement of financial performance as at 31 March 2020

Revenue recorded in the incorrect period - MTEF	(3 079)	-
Other income recorded in the incorrect period - Recovery of study debt/insurance claims	-	(279)
Expenditure recorded in the incorrect period	5 161	5 203
Payment incorrectly allocated	(3 100)	
Prepaid expenses not accounted for correctly	-	(397)
Retention on projects recorded in the incorrect period	(637)	
Depreciation/amortisation recorded in the incorrect period	(2 383)	-
Work in progress captured as an expense	(65)	(2)
	<u>(4 101)</u>	<u>4 525</u>

25 Correction of prior year error (continued)

2021

2020

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	R'000	R'000
Effect		
Statement of financial position as at 31 March 2020		
Government Grant Project Related Revenue Recognised - Deferred income	976	-
Study debt recovered and insurance claim accounted for correctly	-	279
Retention on projects not provided for - Payables	637	-
Capitalisation of vat on asset	1 319	-
Payment incorrectly allocated	3 100	-
Expenditure recorded in the incorrect period not provided for	(6 480)	(5 203)
Prepaid expenses not accounted for correctly	-	397
Revenue recorded in the incorrect period -debtors	2 103	-
Accumulated depreciation/amortisation recorded in the incorrect period	2 383	-
Work in progress captured as an expense	65	2
Statement of net assets for the period ended 31 March 2019		
Accumulated surpluses	4 101	(4 525)

Correction of Prior year disclosure

Nature

Disclosure as at 31 March 2020

Restatement of closing balances of cumulative expenditure recognised in the carrying value of property and equipment being developed/constructed:

	Period	2021 R'000	2020 R'000
Buildings and Fixtures	31-Mar-19	-	5 919
Equipment	31-Mar-19	-	1 865
Aircraft and Boat	31-Mar-19	-	57
Restatement of closing balances of commitments			
Approved and contracted	31-Mar-19	-	(25 370)

Effect

None (only disclosure item)

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26 Change in accounting estimate

2021
R'000

2020
R'000

The useful lives of property and equipment was reassessed. This resulted in change of estimated remaining lives of certain assets in the categories listed below:

	Old	New
Equipment	5 - 7 years	5 - 10 years
Office furniture	20 years	20 - 23 years
Motor vehicles	5 - 8 years	5 - 10 years
Computer equipment	6 years	6 - 11 years
Computer software	2 - 5 years	2 - 8 years

The effect of the change in accounting estimate has resulted in depreciation amounting to R 143,876 in 2020/2021.

The change of R1,213,345 will be reflected in future periods.

The residual values of property and equipment was reassessed. This resulted in a change of estimated residual values of assets in the categories listed below:

Residual values

	Old	New
Equipment	5% of cost	0% of cost
Office furniture	5% of cost	0% of cost
Computer equipment	5% of cost	0% of cost
Vehicles other	10% of cost	0% of cost

The effect of the change in accounting estimate has resulted in depreciation amounting to R 3,425,263 in 2020/2021.

Due to the change in accounting estimate regarding the useful life of assets, the depreciation expense is reported at:

31 018

20 563

Equipment	22 494	14 362
Office furniture	719	628
Motor vehicles	2 605	2 466
Computer equipment	3 699	2 297
Computer software	1 501	810

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26 Change in accounting estimate (continued)

Depreciation expense using the previous rates would have been reported at:

	2021 R'000	2020 R'000
Equipment	19 985	16 756
Office furniture	291	635
Motor vehicles	2 565	2 670
Computer equipment	3 321	2 719
Computer software	1 574	899
Difference	(144)	(3 117)
Equipment	(71)	(2 394)
Office furniture	8	(8)
Motor vehicles	14	(204)
Computer equipment	(22)	(422)
Computer software	(73)	(89)
Difference	3 425	-
Equipment	2 580	-
Office furniture	420	-
Computer equipment	400	-
Vehicles other	25	-

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27 Heritage assets disclosure

GRAP 103 defines heritage assets as assets which have a cultural, environmental, historical, natural, scientific technological or artistic significance and are held indefinitely for the benefit of present and future generations.

Certain heritage assets are described as inalienable items thus assets which are retained indefinitely and cannot be disposed of without consent as required by law or otherwise.

Nature

The Council for Geoscience has the following different classes of heritage:

- Gemstone collections	1 445	1 445
- Meteorite collections	2 804	2 804
- Mineral collections	13 313	13 313
	<u>17 562</u>	<u>17 562</u>

The heritage assets were at initial recognition valued at fair value using evaluators with the following credentials:

Fossils -	Professor for Paleontological Research, University of the Witwatersrand
Mineral collections -	M.Sc. Geology and Professor and Chairman of the Department of Geology, University of the Witwatersrand
Meteorite collections -	Author of "Meteorites", Private collector of meteorites
Gemstones -	M.Sc. Geology

Various valuation methods were used taking into account the different types of heritage assets held by the Council for Geoscience.

The valuations reports are held at the Council for Geoscience offices and are available for inspection.

The Palaeontological (fossil) assets have no monetary value as legislation does not permit the purchase or sale of fossils.

(National Heritage Resources Act 1999 par 35(4)(c).

The Council for Geoscience is in possession of old scientific equipment only for display purposes.

This equipment does not carry any value.

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