"The commercial invoice – paradigm shift for the reality on the ground in Africa"

Presented at the **7th International Workshop on Sustainable Road Freight**, which takes place online on **28-30 October 2020**, Session – Decarbonising Freight Transport: Strategies for Developing Countries

NAMIBIA BIOMASS CASE STUDY

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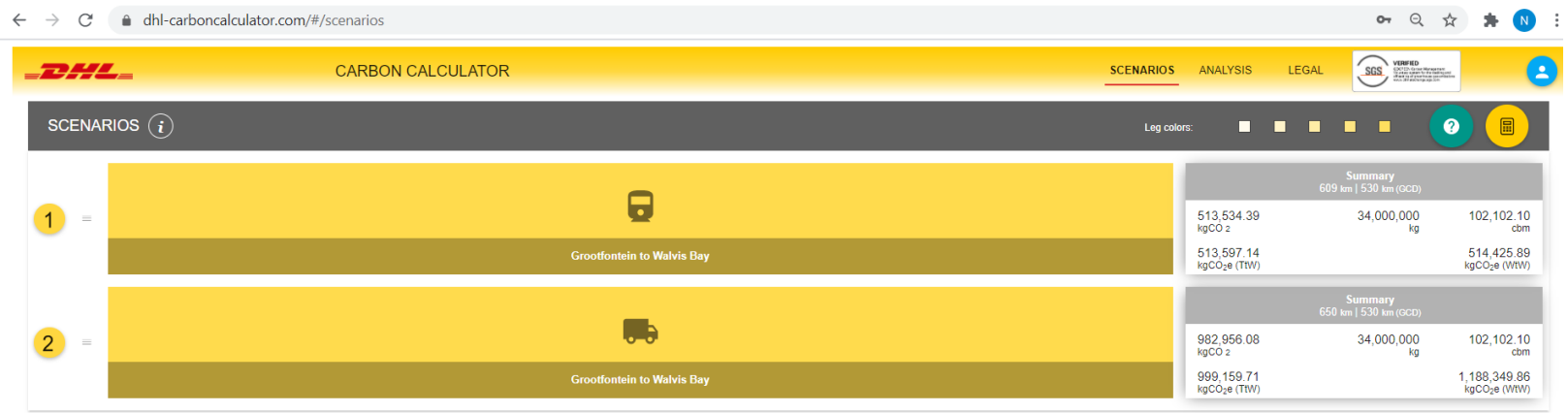
Grootfontein, Namibia – FOB Walvis Bay, Namibia



Ascon and partners have developed a green logistics solution for Ascon's biomass exports and third party commodities out of Walvis Bay, Namibia and the Southern Africa region whose mining activities, transport corridors spurred on by the phenomenal demand of ironically renewable energy raw materials, run through the most wildlife diverse game parks. Through railway intermodal connections at Grootfontein and Gobabis, the catchment area for Walvis Bay stretches to the DRC, Zambia Copperbelts and up to Johannesburg, to name a few in the Southern Africa Development Community (SADC) region. A dedicated dry bulk terminal, storage area allows Ascon to provide a faster and secure Atlantic sailing than Indian ocean ports for European bound cargoes.

From Q1 2019 Ascon will provide decarbonised transit from the SADC hinterland extending to DRC-Zambia Copperbelts via the Ascon pit to port solution using symbiotic logistics and green supply chains. This ensures that the very vessel/rail/road transport, bringing in the mining consumables/capital equipment load a return leg with reverse logistics to prevent "dead legs". With Ascon's vast network, experience, mandatory use of biodiesel on all logistics from Q2 2021, carbon accounting techniques for commercial invoices, bills of lading we have the optimal solution for decarbonising supply chains and achieving commodity traceability. A solution coming from the "industry" will compliment input from environmental advocates and policy.

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COMMERCIAL INVOICE

Ascon Group GmbH
Witternstrasse 20
Hamburg 21107
GERMANY
Company Reg: HRB 49186
VAT NO.: Available on request

INVOICE NUMBER	NIPOWCM0510202
INVOICE DATE	October 5th, 2020
VENDOR NO.	
PURCHASE ORDER NO.	
PAYMENT TERMS	Letter of Credit at Sight
OUR REP.	Nate Macmillan

Procurement Manager
Japan Pulp Company
Yokohama Prefacture
Japan

VAT rate: export No VAT

QUANTITY	DESCRIPTION	QUANTITY	UNIT PRICE PER BONE DRY TON	AMOUNT
1	**Woodchip TAPPI UPM 21 Sizing FOB Walvis Bay** *Harvesting Emissions Zero Rated* Rail Carbon Emissions **513,534.39kgCO 2** CO2e Tank to Wheel **513,597.14 kgCO2e (TtW)** CO2e Well to Wheel **514,425.89kgCO2e (WtW)**	34000,00 tonnes	USD 60,00	USD 2 040 000,00

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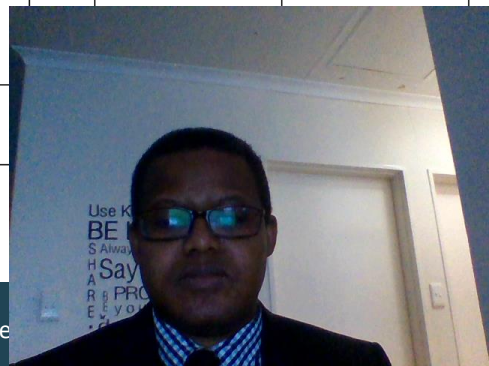

Carbon Credits, Carbon Sinks, Sustainable Mining & Logistics

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Carbon Sinks/Credits

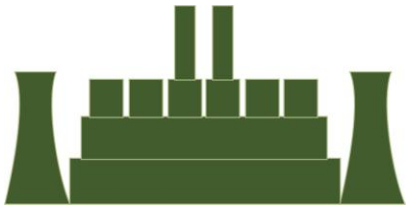
Ascon Group is going beyond current carbon credit schemes and creating carbon sinks ahead of carbon tax promulgation in most jurisdictions. Step ahead of time with Ascon on this robust carbon toolkit and reap the carbon tax rebates

Biodiesel

Ascon Group from Q2 2019 are importing biodiesel for use on our fleet, mines and logistic partners. With B10, B20, B50 & B100 we ensure a green footprint in all our mining, supply chain and logistics activities.

Planting Green shoots

Ascon Group has a bush thickening/invasive bush harvesting project in Namibia where the georeferenced harvested stumps, coppice readily, regrow from stump level, analogous to tree planting. The new growth generates carbon credits via additionality as the harvesting operation is cash negative, subsidised by the carbon credit generation and monetisation



Biomass

Ascon Group has diversified its energy commodity portfolio to include woodchips and charcoal pellets and/or granules. In this regard we are aligned with the gradual shift from coal to biomass

Doing our Bit

As most of our industrial & mining counterparties battle with their core business, we further offer woodchips for power generation and gener
regrowth of harvested

The carbon credit gene
manufacturing/minin
offset but this becom
efforts

Please join us on this g

Summary of Namibia Biomass Harvesting & Export

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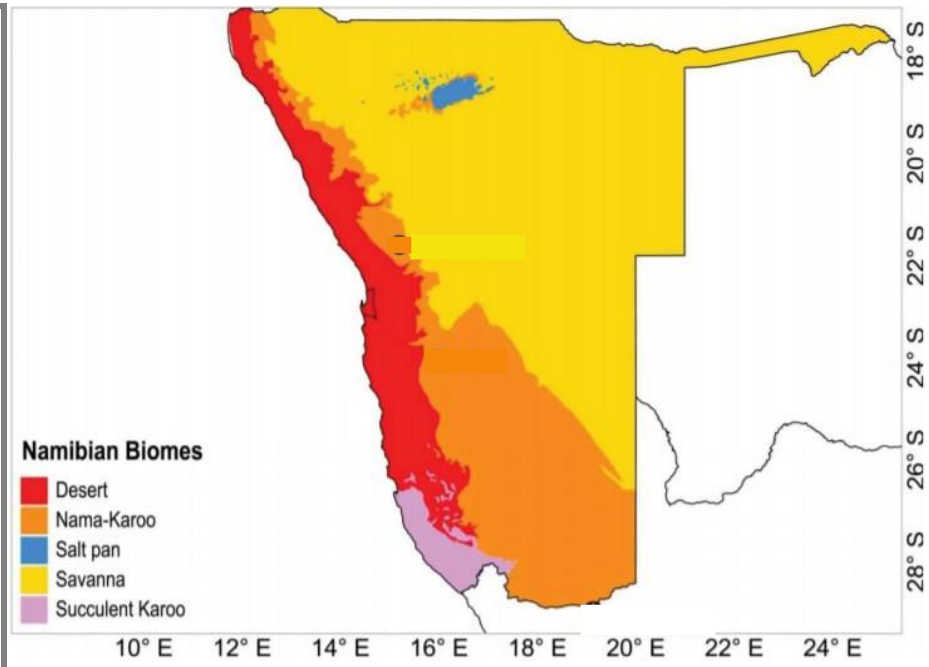
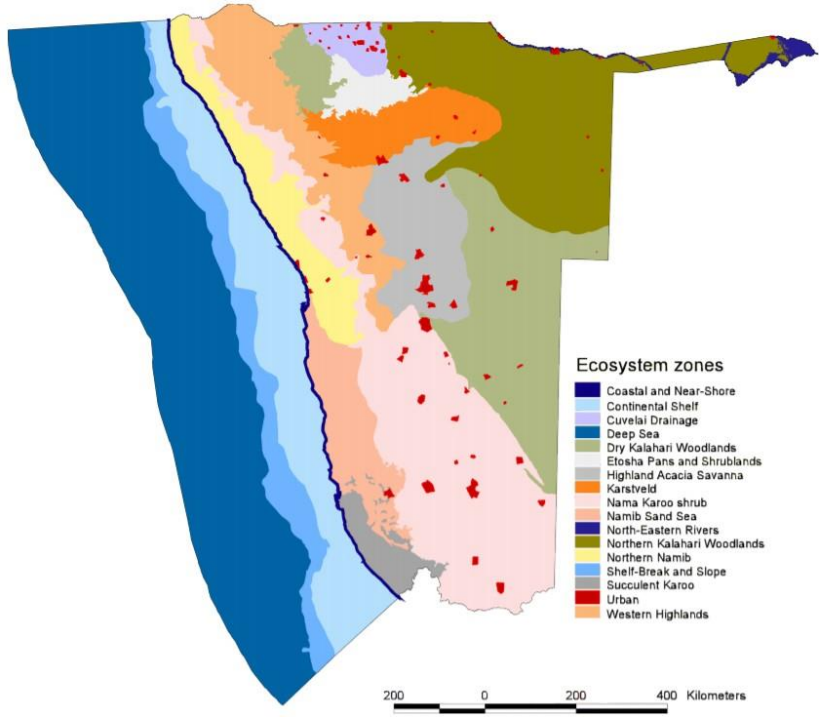
- Former German colony & South Africa annexed territory, located in South West Africa, sparsely populated with 2.3 million
- Namibia has an area of 824 260 square km, situated in Southern Africa bordering South Africa, Botswana, Angola & Zimbabwe
- Namibia spans 1 320 km & 1 440 km at its longest & widest points, respectively. Has an Atlantic coastline of approximately 1 570 km
- Namibia is a semi arid to arid environment, water scarce, subject to the undesirable effects of the aggressive bush series
- The Namibian biomes are tree & shrub savanna biome, Namib Desert, Nama Karoo, Succulent Karoo, lakes & salt pans.
- The bush problem mostly affects prime cattle ranching areas in the north, while in the drier south small stock farming is affected
- The cattle ranching is critical to Namibian balance of trade hence rangeland management of the invasive bush species is top of the agenda.
- Bush encroachment & bush thickening diminishes the land's carrying capacity. The total number of livestock in Namibia is said to have dropped from 2.5 million in 1958 to 800,000 in 2001
- Namibia, a democratic Republic, gained independence in 1990. Third & Current President Hage Geingob is serving a 2nd term in office in November 2019 following a very fair voting process & peaceful election





- Ascon intend to at peak, Q3 2022, export 24 million tonnes of biomass per year:
  - 0.9 Million tonnes/month wood chips
  - 0.6 Million tonnes/month charcoal
  - 0.4 Million tonnes/month raw logs
  - 0.1 Million tonnes/month sawn timber
- The charcoal pellets will have associated power generation from charcoal coke ovens & wood oil g
  & activated charcoal
- Further raw materials from biomass include gum for the confectionary, bark for tannins & multipurpose

Harmful Effects of Encroacher Invasive Bush Thickening

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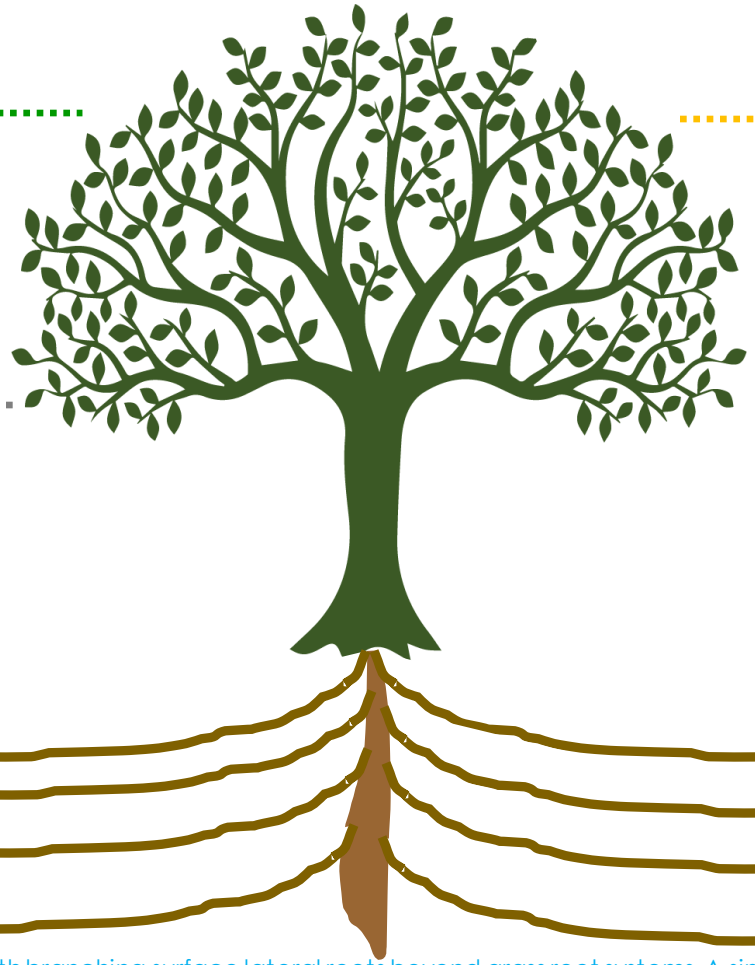
Bush encroachment is the thickening up or invasion by trees, which then suppress productivity of the grass layer. Bush encroachment of savannah ecosystems has been identified as a major problem threatening biodiversity, grazing land productivity & the groundwater recharge in Namibia with 50 million hectares impacted

The bush has a wide root network and leaf canopy, which suppresses the growth of grass and other plants within its proximity, resulting in a biodiversity loss and the degradation of the savannah land



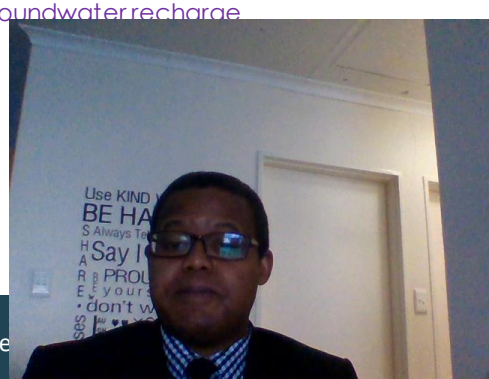
The vegetation turnover is caused by the interplay at different timescales of abiotic drivers/triggers such as a complex network of global, regional, and local triggers and drivers including land management (forestry, husbandry/ cultivation), frost occurrence, precipitation, soil erosion, reduced soil moisture, grass cover, fire intensity, atmospheric CO2, botanical species competitiveness

Economic loss, fire risk, diminished biodiversity, loss of habitat heterogeneity, microhabitat modification, soil property changes, allelopathy, thickets also hinder livestock & game movements

Socio-economic impacted industries include, agriculture, livestock & game farming, tourism industry,

The root network of an encroacher bush that prohibits grass growth within its vicinity and severely groundwater recharge

Deep, woody taproot with branching surface lateral roots beyond grass root systems. A single 2.5 meter tall Senegalia mellifiera (Black Thorn or Swarthaak) bush is estimated to draw up over 60 litres from the ground into the air each day through evapotranspiration. And given the fact that an average bush encroached hectare of land can host over 2 000 bushes of various height classes, loss of soil moisture into the atmosphere is significant. This, in turn, also reduces the available soil moisture for grass growth and for the replenishment of the groundwater systems.



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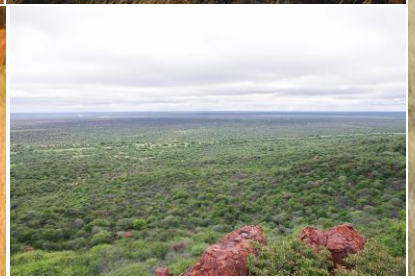
Namibia Biomass Postcard










Land Management

- Originally grass savannah with wildlife
- Annexation of Namibia by Germany & South Africa
- Displacement of browsing & grazing wildlife
- Extensive overstocking of browsing small stock & live stock
- Agriculture, introduction of Proposis & Eucalyptus
- Overstocking on traditional grassland savannah
- Land clearing for settlements & mines

19TH CENTURY

Bush Encroachment & Bush Thickening

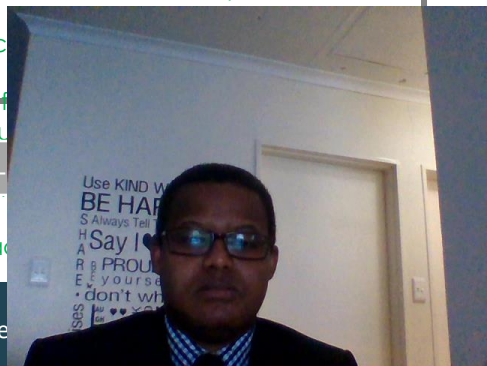
- Encompasses 50 million hectares in Namibia of impenetrable thickets
- Bush Thickening by densification of indigenous woody shrub & tree species
- Bush encroachment by establishment of woody species where they did not occur previously
- Damming of rivers and frequent fires in the Northern Kalahari
- Evapotranspiration losses of groundwater & extensive root systems
- Major loss of species biodiversity & livestock mortalities due to droughts

CURRENT STATUS QUO

Ascon Bush Thinning & Rangeland Restoration

- Environmental Impact Assessment & Forestry Sustainability Certification
- Contracts with farmers for cyclic bush thinning & pasture management
- Harvesting Permits in accordance to Laws of Republic of Namibia
- Manual & minimal semi-mec
  coppice/regrow
- Charcoal pellet production f
  branches/leaves/debris/shru
- Wood chip prod
- Full transparency
  chain
- Carbon offsets & carbon tra
  from stumps

2021-



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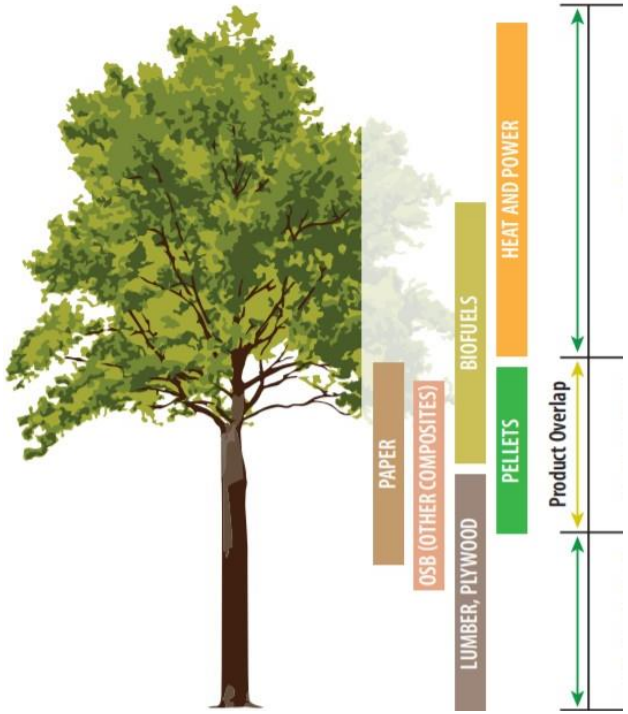
Biomass Utilization



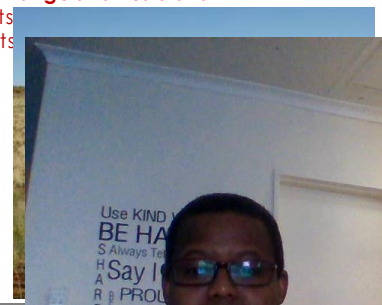
Biomass peak exports Q3 2022
24 Million Tonnes per Annum
Fuel & Pulp Grade Woodchips: 0.9 Million tonnes/month
Charcoal Pellets: 0.6 Million tonnes/month
Logs: 0.4 Million tonnes/month
Timber: 100,000 tonnes/month

Bark (Gum & Tannins)

Pharmaceuticals, Methanol, Biochemicals & Bio-Oils

Charcoal
Charcoal Pellets – Coal Replacement
Biochar – Agri-Fertilizer
Activated Charcoal

Brush Packing Rangeland Restoration
Carbon Offsets
Carbon Credits



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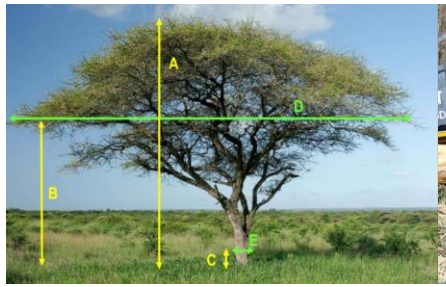
Overview








- **Manual Harvesting** via chainsaw to create **roadways** for mechanical harvesters & **minimal environmental disturbance**
- **Section B of** main stem from **Ground level** to canopy for **wood chips**
- **Section A & D,** branch & canopy intersect for **charcoal granules/pellets** a straight **replacement for coal** as **no CAPEX** and/or investment needed for **existing coal** handling & power generation **infrastructure**

- **All engines Euro 5-6 & Final Tier IV minimum** both In-field, on- & off-road **equipment**
- Use of **minimum B5 biodiesel** Q1-Q3 2021 **& minimum B20** Q3 – Q4 2021
- Any equipment delivered from 2023 has to B100 biofuel
- **In-field loggers/ skidders/ chippers/**logistics depot mobile **chippers/**port stockpile **mobile chippers**
- **Life Cycle Assessment (LCA)**

- **Biodiesel blending tank farm 150 million – 500 million litres** at **Walvis Bay, Namibia** to supply all wood harvesting upstream operations
- **Field – Central Logistics Hub**
- **Central Logistics Hub –** Rail
- **Central Logistics Hub – Port**
- **In Port Stockpile – Quayside**
- Port – Farm **Reverse Logistics**
- **MARPOL Annex VI IMO Sulphur Cap** for all vessels
- **Sustainability:** FSC, PEFC & SPB
- **Japan Clean Wood Act**
- **European Union Timber Regulation (EUTR)**

- **The commercial invoice** "adulterated" with **emissions calculations** from the **GHG Protocol,** the **Corporate Accounting & Reporting Standard, Corporate Value Chain (Scope 3) Accounting & Reporting Standard**
- European Emissions Trading System **(EU-ETS)**, the **EN 16258 &**
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Game Parks & Central Africa Copperbelt Corridors

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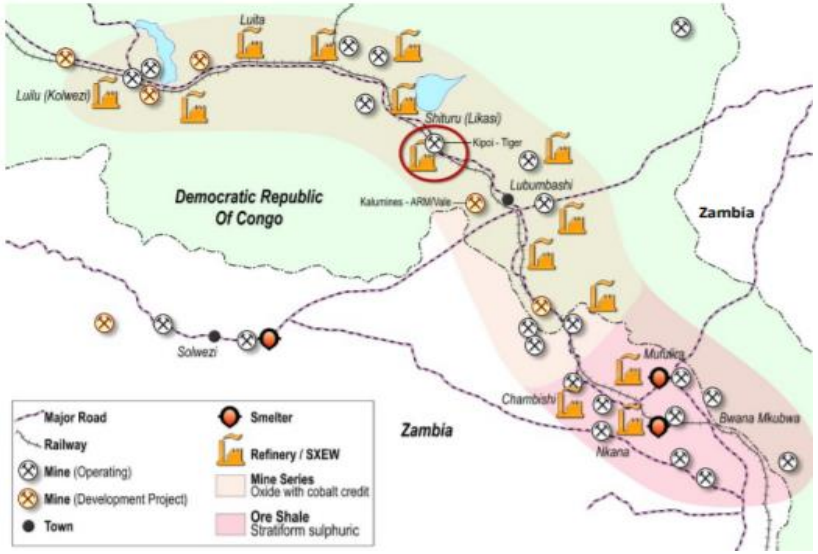
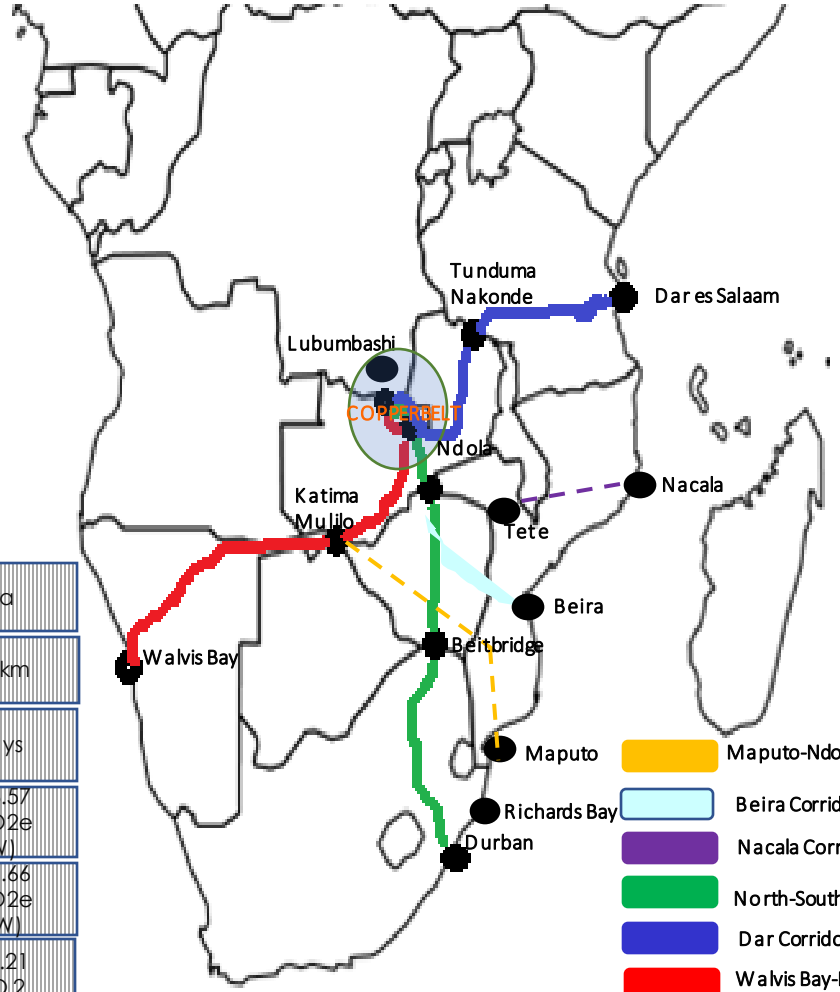
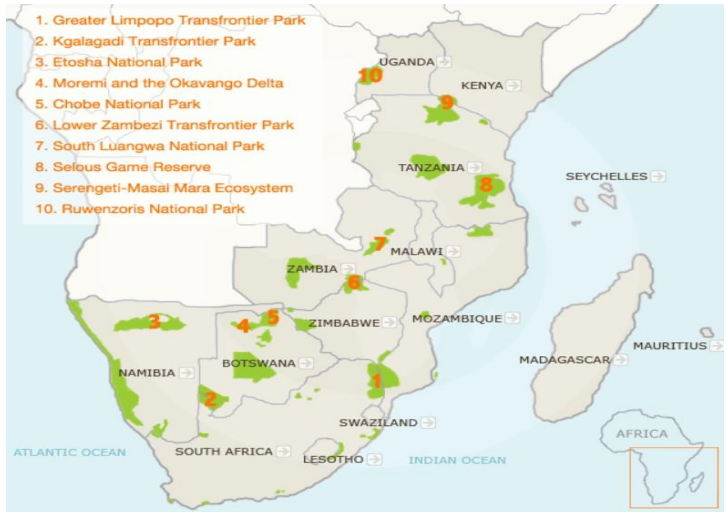
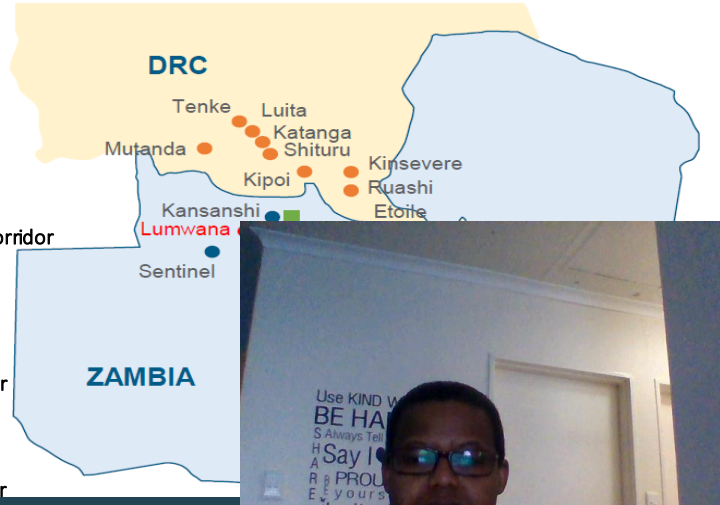
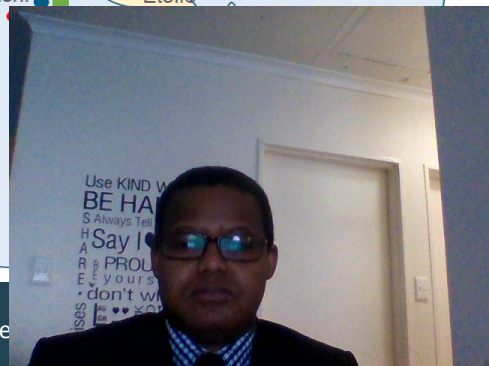






Corridor/Border Performance	Dar es Salaam	Walvis Bay	Durban	Beira
Distance (Lubumbashi)	2079 km	2514 km	2714 km	1618 km
Transit Time	10 days	6 days	11 days	5 days
CO2e Tank to Wheel	3,711.18 kgCO2e (TtW)	4,671.70 kgCO2e (TtW)	4,845.73 kgCO2e (TtW)	1,748.57 kgCO2e (TtW)
CO2e Well to Wheel	4,413.89 kgCO2e (WtW)	5,556.29 kgCO2e (WtW)	5,763.26 kgCO2e (WtW)	2,079.66 kgCO2e (WtW)
Carbon Emissions	3,650.99 kgCO 2	4,595.94 kgCO 2	4,767.14 kgCO 2	1,720.21 kgCO 2





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