

# Background to CRIDFs Water and the Economy Project

This information on 'Water and the Economy' for the 12 mainland States in the Southern African Development Community (SADC) is aimed at providing an overview of the role of water in driving the economies of these countries. The infographics may be used to assess vulnerability to variability in the availability of water and other potential stressors induced by climate change.



The country-specific pull-outs are intended to be primarily comparative rather than directly quantitative in nature and have been derived from a number of freely downloadable sources. Furthermore, CRIDF has compiled its own database on Virtual Water traded in agricultural products and electricity and is available from the contact addresses provided on the cover folder. Other data sources that may be consulted are:

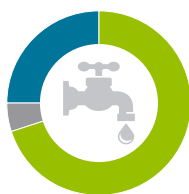
- SADC Statistics Yearbook 2011 - <http://www.sadc.int/information-services/sadc-statistics/sadc-statiyearbook/>
- SADC Economic Accounting of Water Use Project - <http://www.sadcwateraccounting.org/>
- The Statistics Division of the Food and Agriculture Organisation - <http://faostat.fao.org/>
- Knoema Data - <http://knoema.com>

## Sources and explanations



**GROSS DOMESTIC PRODUCT (GDP) PER SECTOR PER YEAR:** The GDP is reflected in current US\$ terms. The percentage contribution for the three main water using sectors is derived from the International Standard Industrial Classification (ISIC). Agriculture corresponds to ISIC divisions 1-5 which includes forestry, hunting and fishing as well as cultivation of crops and livestock production. Industry includes mining use. Notably, South Africa's GDP makes up 61% of the total SADC mainland GDP and 67% of the total SADC mainland GDP is driven by only 5% of the regions surface water.

**Data source: World Bank (2014)**



**WATER USE PER SECTOR:** This reflects the average percentage of the total water withdrawals that can be ascribed to each sector. Typically low and middle income countries have up to 82% of agricultural withdrawals, about 8% for domestic and 10% for industrial use. High income countries have 11% domestic, 59% industrial and 30% agricultural usage. Notably, Malawi, Swaziland and Tanzania (86%, 94% and 89% respectively) have higher proportions of agricultural use.

**Data source: FAO Aquastat**



Value (\$1000) of Agricultural products

**THE TOTAL US DOLLAR VALUE OF GLOBAL AND REGIONAL IMPORTS AND EXPORTS OF AGRICULTURAL PRODUCTS PER YEAR:**

Set against the GDP figure, these data provide an indication of the trade balance in agricultural goods, both with the rest of the world and with other SADC countries. It reflects the importance of agriculture as a forex earner. Most SADC mainland States are net earners in agricultural exports. Notable exceptions are Angola and the Democratic Republic of the Congo, which are both net importers of agricultural goods despite their relative water abundance. Remarkably, most of these imports come from outside of SADC.

**Data source: CRIDF Virtual Water database (2012)**



**IMPORTED WATER FOOTPRINT PER PERSON PER YEAR:** A country's water footprint per person is the amount of water embedded in all products consumed in the country divided by its population. Generally, the water footprint is related to the wealth of the country and globally it ranges from 2483 m<sup>3</sup>/person/year in the USA to 619 m<sup>3</sup>/person/year in the Yemen. Exceptions in the SADC mainland context are Malawi, Mozambique, Swaziland and Tanzania, with relatively higher irrigation demands for exported products. Botswana (45%) and South Africa (22%) are significant importers in SADC due to their relative wealth and lack of water.

**Data source: Mekonnen and Hoekstra (2011)**



**WATER FOOTPRINT OF IMPORTS AND EXPORTS OF AGRICULTURAL PRODUCTS:**

Water footprints are expressed as **Blue water**, which is derived from river, lake or groundwater abstraction – mostly through irrigation but also including process water. **Green water** is derived from rainfall and is determined mainly from crop evapotranspiration. **Grey water** is a measure of the pollution impact of producing the good and is a reflection of the amount of water that would be required to dilute the pollution impact during production. These infographics show the blue, green and grey water percentages of agricultural goods imported and exported. South Africa, Zambia and Zimbabwe stand out as having higher blue water contents of their agricultural exports, indicating the relative importance of irrigation for the forex earnings of these countries.

**Data source: CRIDF Virtual Water database (2014)**



**TOTAL RENEWABLE WATER PER YEAR:** This is the total amount of water available as river flows or groundwater derived from rainfall. When set against the total water withdrawals per person, it can provide an indication of the dependence of the country on external water resources through cross border flows or water footprint imports. Countries with a low **water availability/person:water use/person** ratio are more water stressed and more dependent on 'imported' blue or green water. Notably, South Africa, Swaziland and Zimbabwe have ratios below five.

**Data Source: World Bank & FAO Aquastat (2012)**



**TOTAL DAM STORAGE PER PERSON:** This is a reflection of the amount of blue water that is stored in the country relative to its population. World-wide per person storage ranges from 5,500 m<sup>3</sup>/person (North America), to 2,500 m<sup>3</sup>/person (South America) and 1,500 m<sup>3</sup>/person (Europe). In SADC mainland States, it is typically less than 1,000 m<sup>3</sup>/person. Countries with low storage and lower per person renewable water availability will be more vulnerable to decreased rainfall or delayed onset of rains. If low storage is coupled with a higher blue water content of exports, the country's economy can also be affected by reductions in rainfall. Lesotho, Malawi and Zambia stand out as being vulnerable in this regard.

**Data source: FAO Aquastat (2012)**



**WATER WITHDRAWALS PER PERSON PER YEAR:** This is a reflection of the total amount of blue water withdrawn from lakes, rivers or groundwater per person, irrespective of the use of that water. Countries that abstract a large amount of water for irrigation relative to their population are Swaziland, Zimbabwe and South Africa.

**Data source: FAO Aquastat (2012)**



**THE WATER FOOTPRINT OF MAJOR EXPORT CROPS:** This provides an indication of the total tonnage, earnings and blue, green and grey water content of the country's top four exported crops. Crops with a higher blue water content are more reliant on irrigation. Some crops, like tobacco, are very high earners per unit of blue water, whereas others like fruit products tend to use more blue water irrigation per dollar earned. In some cases, crops either grown under irrigation from polluted rivers or which require some processing have higher grey water contents.

**Data source: CRIDF Virtual Water database (2014)**



**THE GINI COEFFICIENT:** This is a measure of income disparity. It ranges from a theoretical 0 where everyone has the same income to 100, where one person has all the income. It does not account for income derived from social grants. World-wide Gini coefficients range from nearly 70 (Namibia) to 25 (Denmark). Three SADC States are the top 3 in the world - Namibia, Botswana and South Africa with all remaining SADC mainland States except Tanzania being above the global average. The significant income disparities in SADC are likely to drive increasing demands for greater equality and with this an increase in water, food and energy consumption.

**Data source: World Bank (average since 1990)**



**CALORIE INTAKE PER PERSON PER DAY:** This is a measure of food consumption and mostly related to income. Globally, it ranges from 3,800 calories per person per day (Austria) to 1,590 calories (Eritrea). It is a reflection of the amount of food the country has to produce or import to maintain food security. In the SADC mainland countries calorie intake ranges from 3,000 calories (South Africa) to 1,880 calories (Zambia).

**Data source: FAO Aquastat (2012)**



**HUMAN DEVELOPMENT INDEX (HDI):** The HDI Index is a composite statistic of life expectancy, education and income indices used to rank countries into four tiers of human development. World-wide it ranges from Norway at 0.96 to the Democratic Republic of the Congo at 0.30. The UN recommends that countries should aim for an HDI of 0.80. In mainland SADC, the HDI ranges from South Africa at 0.63 to the DRC at 0.30.

**Data source :** UN <http://hdr.undp.org/en/statistics/hdi> (2012)



**HAPPY PLANET INDEX (HPI):** The HPI uses global data on life expectancy, experienced well-being and Ecological Footprint. It is an efficiency measure ranking countries on how many long and happy lives they produce per unit of environmental input. Globally, it ranges from Costa Rica at 64 to Botswana at 23. In SADC, the HPI ranges from 42 (Malawi) to 23 (Botswana). SADC State's HPI is heavily affected by the lower life expectancy due to HIV / AIDS.

**Data source:** <http://www.happyplanetindex.org/>(2013)



**CARBON EMISSIONS:** This is a measure of the total emission of CO<sub>2</sub> per person per year in metric tons and is hence a reflection of the country's contribution to climate change. Globally, it ranges from Trinidad and Tobago at 38 tons per person per year to Lesotho at 0.01 tons. In SADC mainland States, emissions range from South Africa 9.01 tons to Lesotho 0.01 tons.

**Data source:** World Bank (2010)



**ENERGY USE IN OIL EQUIVALENT:** This refers to use of primary energy before transformation to other end-use fuels, which is equal to the country's production plus imports minus exports. World-wide, it ranges from Iceland at 17,964 kg oil per person per year to Eritrea at 129 kg. In SADC mainland States, it varies from 2,741 kg oil (South Africa) to the DRC at 383 kg oil.

**Data source:** World Bank (2011)



**CLIMATE VULNERABILITY INDEX:** A country's climate vulnerability index is composed of a Vulnerability score and a Readiness score. Vulnerability measures a country's exposure, sensitivity and ability to cope with climate related hazards, while Readiness accounts for the overall status of food, water, health and infrastructure within the nation. Globally, it ranges from Denmark at 0.83 to the Democratic People's Republic of Korea at 0.34. In SADC mainland States, it varies from 0.57 in the DRC to South Africa at 0.37, which is very exposed due expected higher temperatures, lower rainfall, and its existing water stress. This high vulnerability is despite South Africa's better readiness.

**Data source:** <http://index.gain.org/>(2012)



# Angola



## GROSS DOMESTIC PRODUCT

GDP \$ 114 147 030 253.23

\$ = \$ 10 Billion

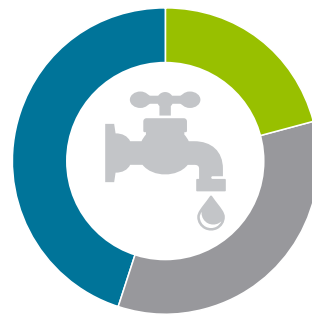


## CONTRIBUTION TO GDP



- 9% Agriculture Value added to GDP (%)
- 59% Industry Value added to GDP (%)
- 32% Services Value added to GDP (%)

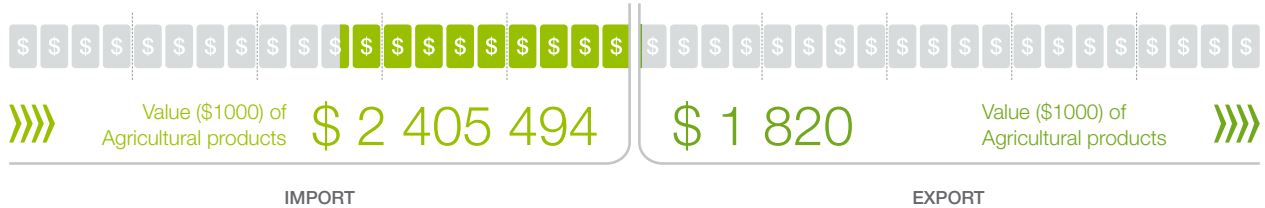
## WATER WITHDRAWAL PER SECTOR



- 21% Agriculture
- 34% Industry
- 45% Urban

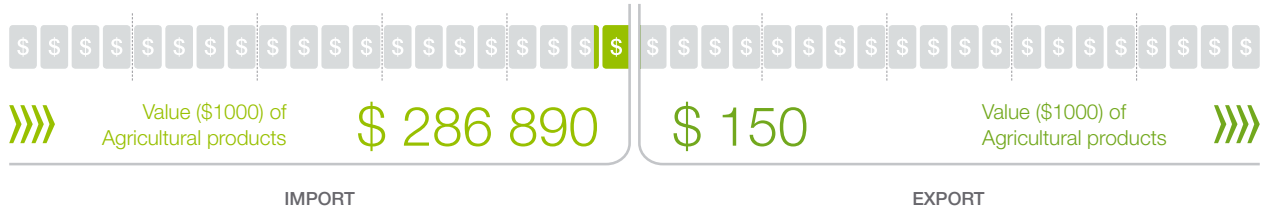
## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



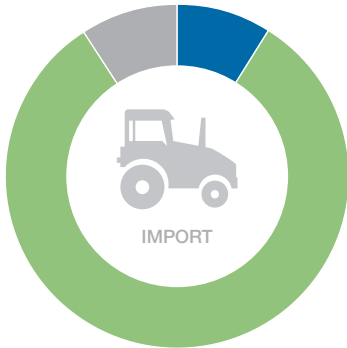
## IMPORTS AND EXPORTS WITHIN SADC

\$ = \$ 250 000 000





WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT



Blue Water 9%

Green Water 82%

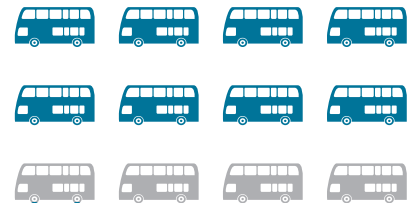
Grey Water 9%

WATER FOOTPRINT



1 004 m<sup>3</sup>  
per person per annum

= 125 m<sup>3</sup>



WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT

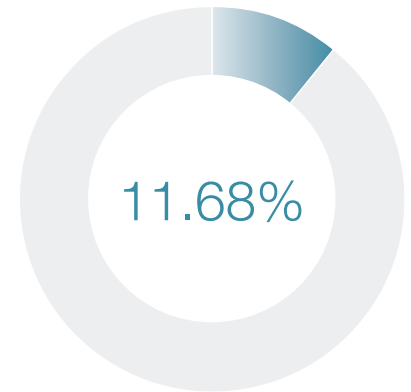


Blue Water 0%

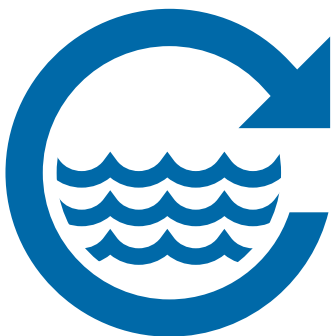
Green Water 100%

Grey Water 0%

WATER FOOTPRINT - IMPORTED



RENEWABLE WATER



Per Person

7 334 m<sup>3</sup>

= 1 000 m<sup>3</sup>




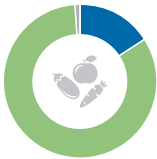


SADC Ranking: Renewable Water per person

2<sup>nd</sup>

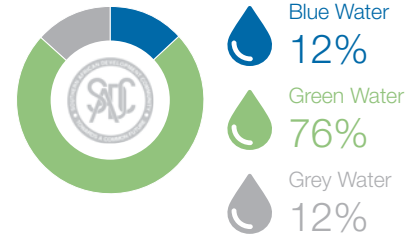
= Position



## MAJOR AGRICULTURAL EXPORTS

Tobacco	Fruit/vegetables	Grains	Coffee
Tonnage			
262	64	44	489
Earning (million \$)			
\$ 0.47	\$ 0.16	\$ 0.026	\$ 1.13
Virtual Water Content (%)			
 <p>Blue Water 0%</p> <p>Green Water 98%</p> <p>Grey Water 2%</p>	 <p>Blue Water 16%</p> <p>Green Water 83%</p> <p>Grey Water 1%</p>	 <p>Blue Water 5%</p> <p>Green Water 88%</p> <p>Grey Water 7%</p>	 <p>Blue Water 0%</p> <p>Green Water 99%</p> <p>Grey Water 1%</p>

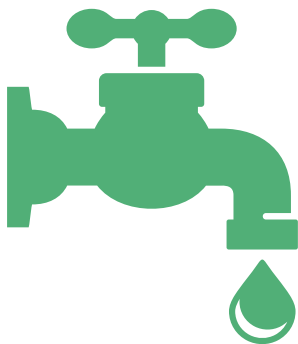
## SADC WATER FOOTPRINT OF IMPORTS



## DAM STORAGE/CAPACITY



## WATER WITHDRAWALS



Per Person

34 m<sup>3</sup>



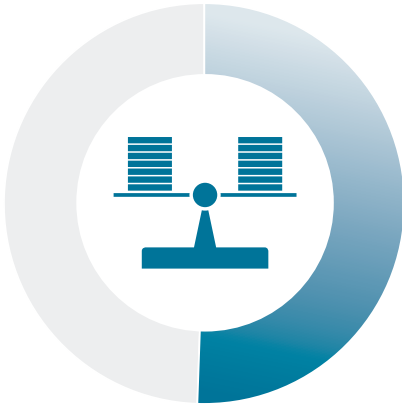
SADC Ranking: Water Withdrawal per person

10<sup>th</sup>



GINI INDEX

Gini 50.65

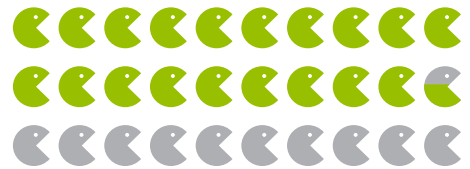


CALORIE CONSUMPTION

1 960 caloric intake per person per day



= 100 calories



HAPPY PLANET INDEX

33.2



HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.51



CO<sub>2</sub> EMISSIONS

1.56 metric tons per capita



= 1 metric ton

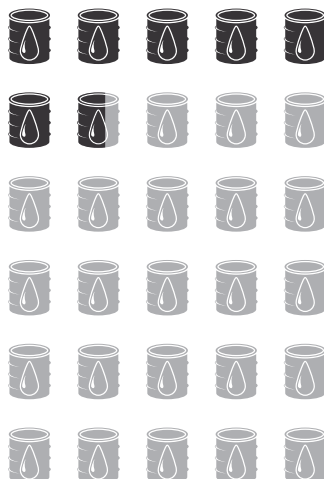


ENERGY USE

672.74 kg oil equivalent per capita



= 100 kg

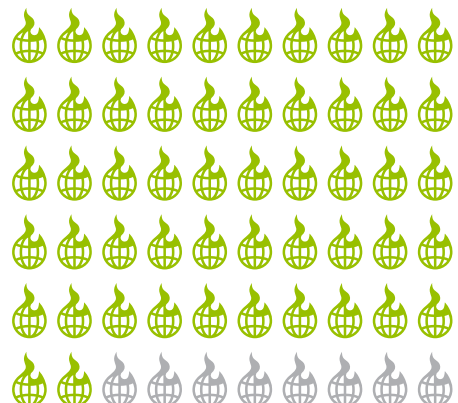


CLIMATE VULNERABILITY INDEX

0.52



= 0.01







# Botswana



## GROSS DOMESTIC PRODUCT

GDP \$ 14 504 339 385.94

\$ = \$ 10 Billion

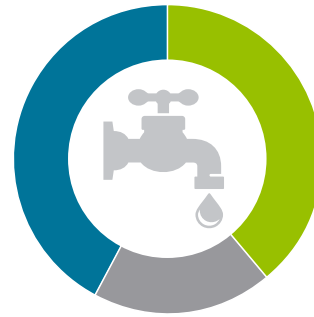


## CONTRIBUTION TO GDP



- 2% Agriculture Value added to GDP (%)
- 37% Industry Value added to GDP (%)
- 61% Services Value added to GDP (%)

## WATER WITHDRAWAL PER SECTOR



- 39% Agriculture
- 19% Industry
- 42% Urban

## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



Value (\$1000) of Agricultural products **\$ 501 356**
 Value (\$1000) of Agricultural products **\$ 92 642**

IMPORT EXPORT

## IMPORTS AND EXPORTS WITHIN SADC

\$ = \$ 250 000 000



Value (\$1000) of Agricultural products **\$ 15 274**
 Value (\$1000) of Agricultural products **\$ 14 475**

IMPORT EXPORT



Botswana

WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT



Blue Water  
11%

Green Water  
81%

Grey Water  
8%

WATER FOOTPRINT



623 m<sup>3</sup>  
per person per annum

= 125 m<sup>3</sup>



WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT

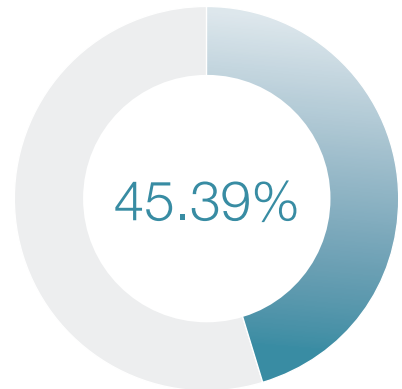


Blue Water  
1%

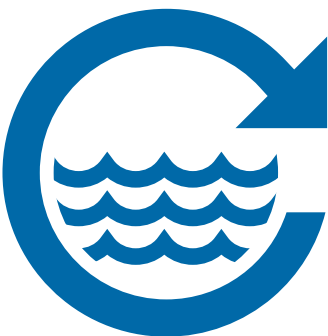
Green Water  
99%

Grey Water  
0%

WATER FOOTPRINT - IMPORTED



RENEWABLE WATER



Total

2.42 km<sup>3</sup>

Per Person

1 208 m<sup>3</sup>

= 1 000 m<sup>3</sup>







SADC Ranking: Renewable Water per person

8<sup>th</sup>

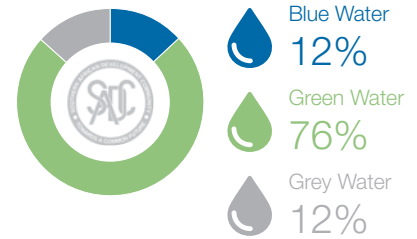
= Position



## MAJOR AGRICULTURAL EXPORTS

Cereals	Sunflower Seeds	Vegetable Extract	Wine
Tonnage			
8 580	11 042	135	393
Earning (million \$)			
\$ 28	\$ 6.7	\$ 3.4	\$ 1 716
Virtual Water Content (%)			
			
Blue Water 0%	Blue Water 0%	Blue Water 7%	Blue Water 16%
Green Water 100%	Green Water 100%	Green Water 58%	Green Water 70%
Grey Water 0%	Grey Water 0%	Grey Water 35%	Grey Water 24%

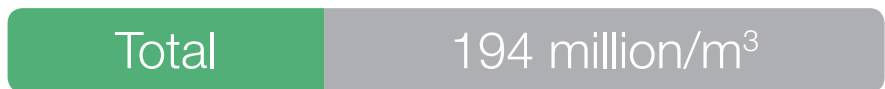
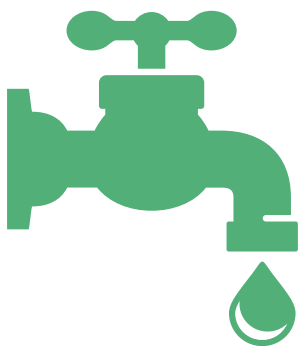
## SADC WATER FOOTPRINT OF IMPORTS



## DAM STORAGE/CAPACITY



## WATER WITHDRAWALS



Per Person

97 m<sup>3</sup>

1 icon = 100



SADC Ranking: Water Withdrawal per person

7<sup>th</sup>

1 icon = Position



# Climate Resilient Infrastructure Development Facility (CRIDF)

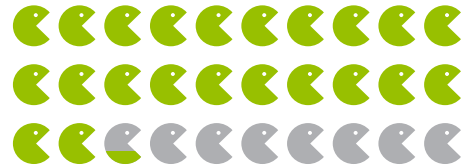
## GINI INDEX

Gini 60.96



## CALORIE CONSUMPTION

2 230 caloric intake per person per day



## HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.63



## HAPPY PLANET INDEX

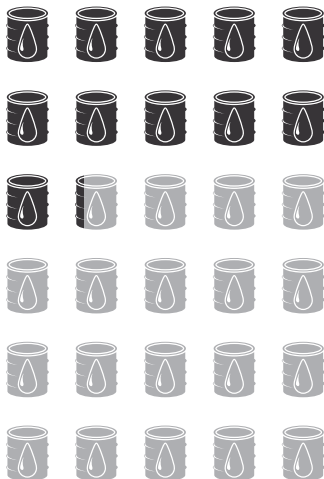
22.59



## ENERGY USE

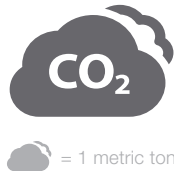
1 115 kg oil equivalent per capita

= 100 kg



## CO<sub>2</sub> EMISSIONS

2.66 metric tons per capita

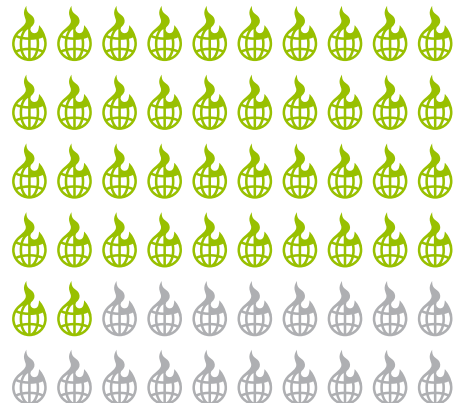


## CLIMATE VULNERABILITY INDEX

0.42



= 0.01





# Congo, DRC



## GROSS DOMESTIC PRODUCT

GDP \$ 17 203 980 742.57

\$ = \$ 10 Billion

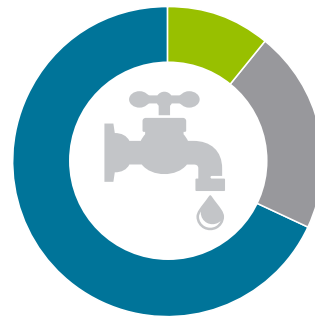


## CONTRIBUTION TO GDP



- No data Agriculture Value added to GDP (%)
- No data Industry Value added to GDP (%)
- No data Services Value added to GDP (%)

## WATER WITHDRAWAL PER SECTOR



- 11% Agriculture
- 21% Industry
- 68% Urban

## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



Value (\$1000) of Agricultural products \$ 453 091
 Value (\$1000) of Agricultural products \$ 37 598

IMPORT EXPORT

## IMPORTS AND EXPORTS WITHIN SADC

\$ = \$ 250 000 000

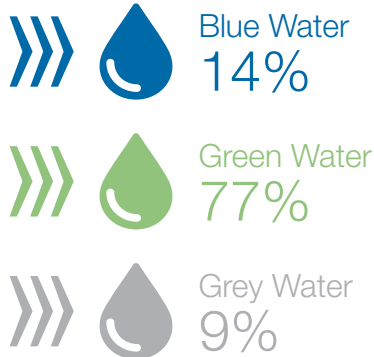
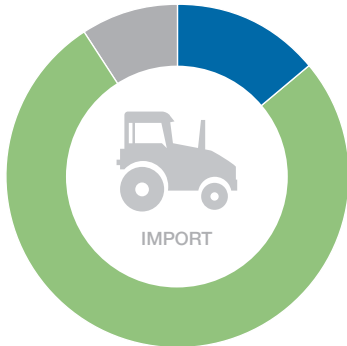


Value (\$1000) of Agricultural products \$ 31 842
 Value (\$1000) of Agricultural products \$ 0

IMPORT EXPORT



WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT

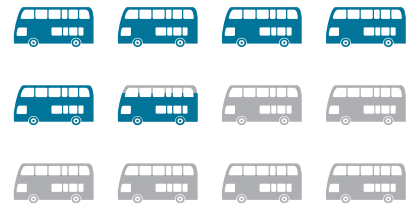


WATER FOOTPRINT



734 m<sup>3</sup>  
per person per annum

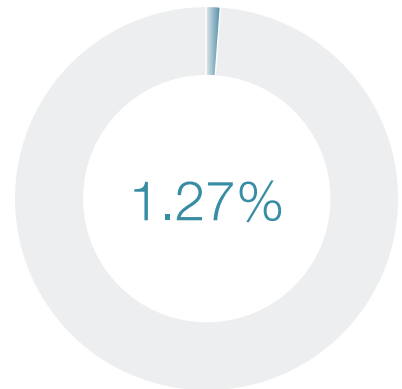
= 125 m<sup>3</sup>



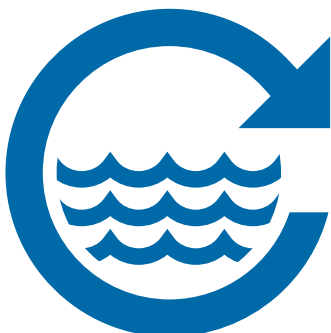
WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT



WATER FOOTPRINT - IMPORTED



RENEWABLE WATER



Per Person

No data

= 1 000 m<sup>3</sup>



SADC Ranking: Renewable Water per person

No data

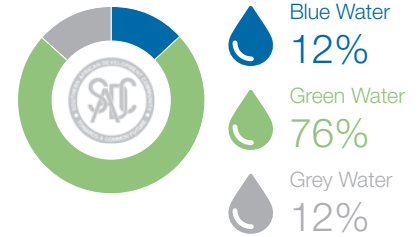
= Position



## MAJOR AGRICULTURAL EXPORTS

Coffee	Palm Oil	Tobacco	Cocoa
Tonnage			
4 306	106 608	842	2 331
Earning (million \$)			
\$ 15.7	\$ 7.1	\$ 2.6	\$ 4.2
Virtual Water Content (%)			
Blue Water 0%	Blue Water 0%	Blue Water 0%	Blue Water 0%
Green Water 100%	Green Water 100%	Green Water 100%	Green Water 100%
Grey Water 0%	Grey Water 0%	Grey Water 0%	Grey Water 0%

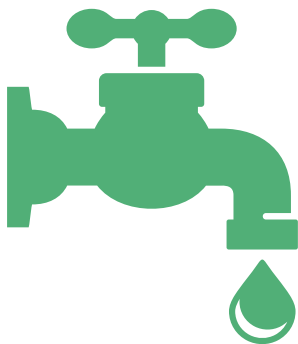
## SADC WATER FOOTPRINT OF IMPORTS



## DAM STORAGE/CAPACITY



## WATER WITHDRAWALS



Per Person

10 m<sup>3</sup>



SADC Ranking: Water Withdrawal per person

12<sup>th</sup>



GINI INDEX

Gini No data



CALORIE CONSUMPTION

No data caloric intake per person per day



HAPPY PLANET INDEX

30.55



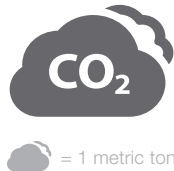
HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.3



CO<sub>2</sub> EMISSIONS

0.05 metric tons per capita



ENERGY USE

383.17 kg oil equivalent per capita



= 100 kg

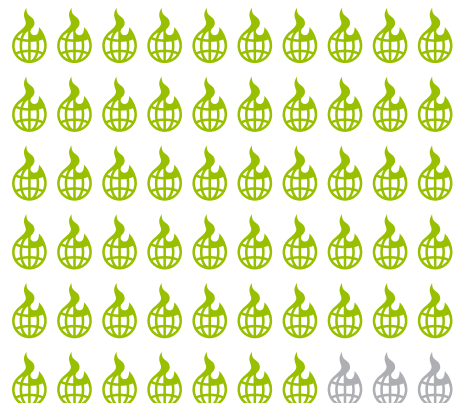


CLIMATE VULNERABILITY INDEX

0.57



= 0.01







# Lesotho



## GROSS DOMESTIC PRODUCT

GDP \$ 2 447 573 299.48

\$ = \$ 10 Billion

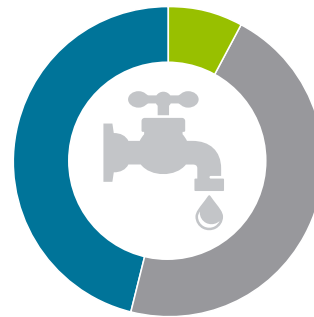


## CONTRIBUTION TO GDP



- 8% Agriculture Value added to GDP (%)
- 37% Industry Value added to GDP (%)
- 55% Services Value added to GDP (%)

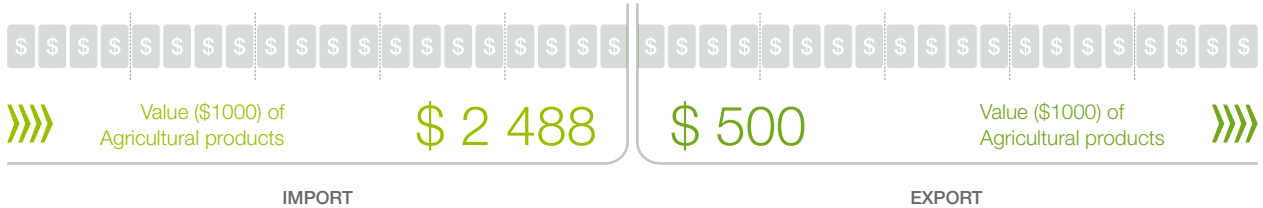
## WATER WITHDRAWAL PER SECTOR



- 8% Agriculture
- 46% Industry
- 46% Urban

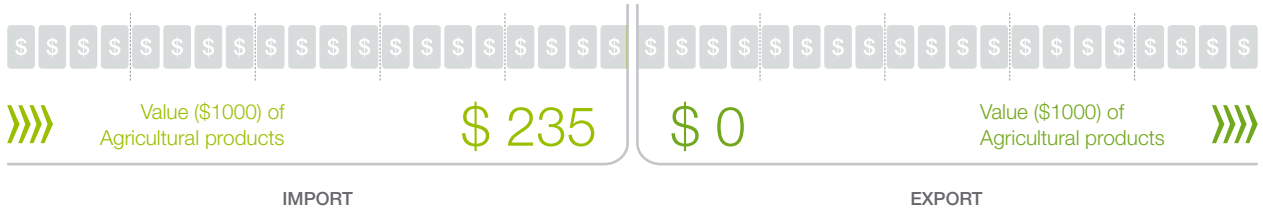
## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



## IMPORTS AND EXPORTS WITHIN SADC

\$ = \$ 250 000 000





WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT



Blue Water  
7%

Green Water  
83%

Grey Water  
10%

WATER FOOTPRINT



No data  
per person per annum

= 125 m<sup>3</sup>



WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT



Blue Water  
86%

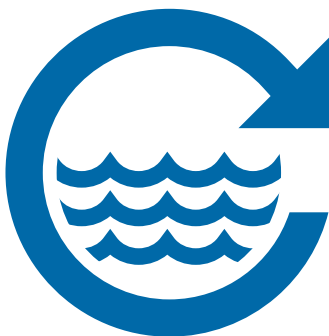
Green Water  
12%

Grey Water  
2%

WATER FOOTPRINT - IMPORTED



RENEWABLE WATER



Per Person

2 577 m<sup>3</sup>

= 1 000 m<sup>3</sup>







SADC Ranking: Renewable Water per person

6<sup>th</sup>

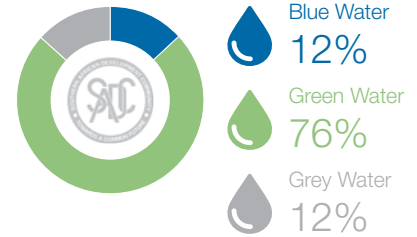
= Position



## MAJOR AGRICULTURAL EXPORTS

Vegetables	Cereal Flour	Cereal Grain	Dried Fruit
Tonnage			
184	237	110	20
Earning (million \$)			
\$ 0.06	\$ 0.15	\$ 0.08	\$ 0.09
Virtual Water Content (%)			
 <p>Blue Water 32%</p> <p>Green Water 57%</p> <p>Grey Water 11%</p>	 <p>Blue Water 100%</p> <p>Green Water 0%</p> <p>Grey Water 0%</p>	 <p>Blue Water 100%</p> <p>Green Water 0%</p> <p>Grey Water 0%</p>	 <p>Blue Water 100%</p> <p>Green Water 0%</p> <p>Grey Water 0%</p>

## SADC WATER FOOTPRINT OF IMPORTS

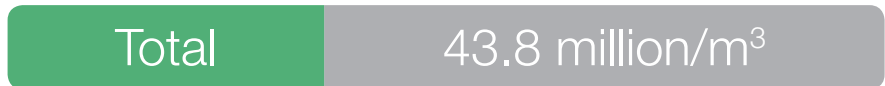
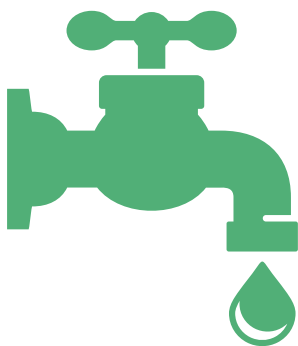


## DAM STORAGE/CAPACITY



\* Excludes the Lesotho Highlands Dams

## WATER WITHDRAWALS

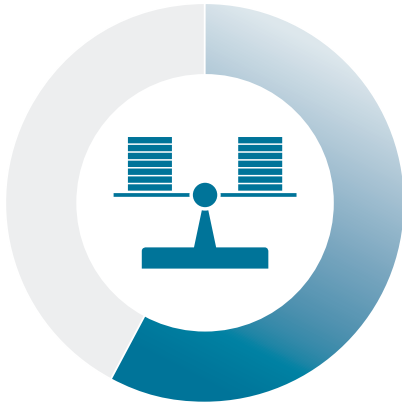


SADC Ranking: Water Withdrawal per person 11<sup>th</sup>



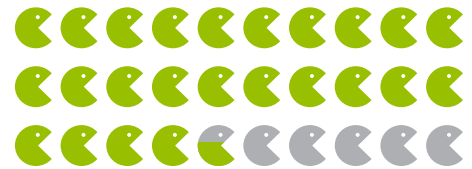
GINI INDEX

Gini 57.87



CALORIE CONSUMPTION

2 460 caloric intake per person per day



HAPPY PLANET INDEX

No data



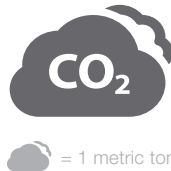
HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.46



CO<sub>2</sub> EMISSIONS

0.01 metric tons per capita



ENERGY USE

No data  
oil equivalent per capita



 = 100 kg

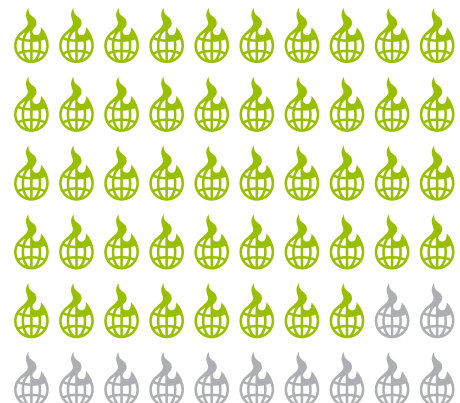


CLIMATE VULNERABILITY INDEX

0.48



 = 0.01





# Malawi



## GROSS DOMESTIC PRODUCT

GDP \$ 4 263 794 983.90

\$ = \$ 10 Billion

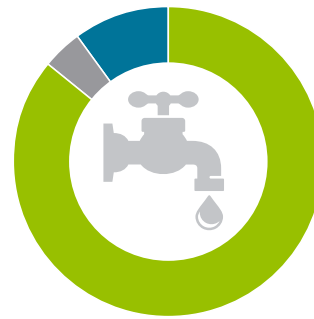


## CONTRIBUTION TO GDP



- 30% Agriculture Value added to GDP (%)
- 19% Industry Value added to GDP (%)
- 51% Services Value added to GDP (%)

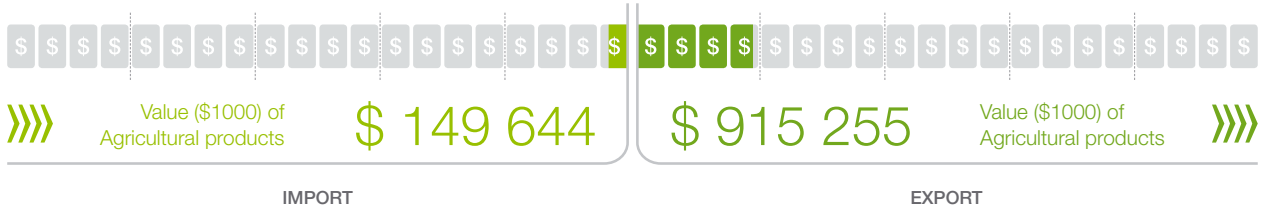
## WATER WITHDRAWAL PER SECTOR



- 86% Agriculture
- 4% Industry
- 10% Urban

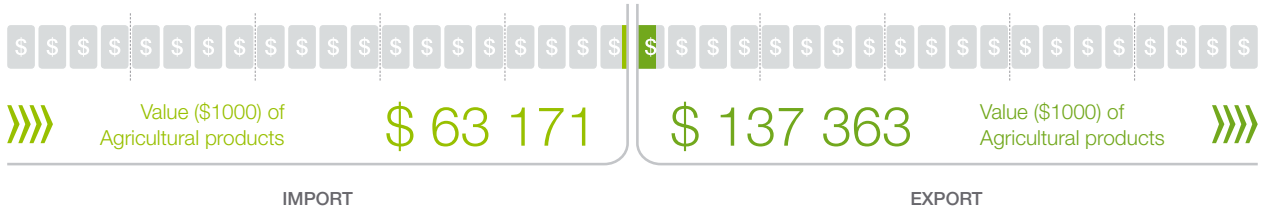
## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



## IMPORTS AND EXPORTS WITHIN SADC

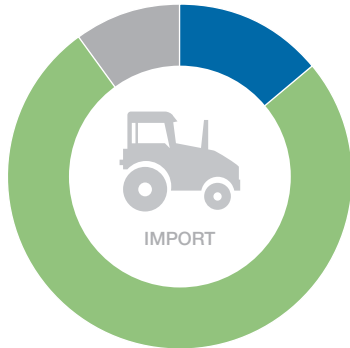
\$ = \$ 250 000 000





Malawi

### WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT



Blue Water  
14%

Green Water  
76%

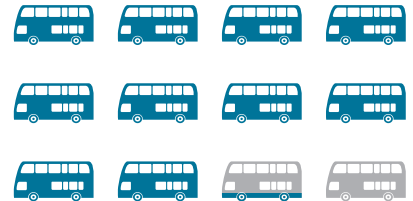
Grey Water  
10%

### WATER FOOTPRINT



1 277 m<sup>3</sup>  
per person per annum

= 125 m<sup>3</sup>



### WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT

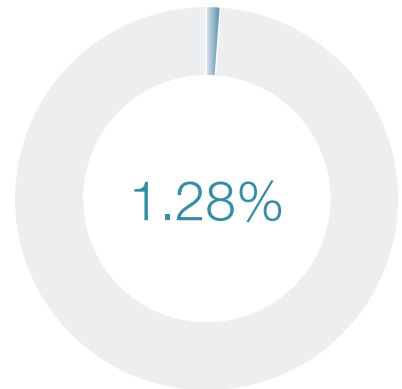


Blue Water  
11%

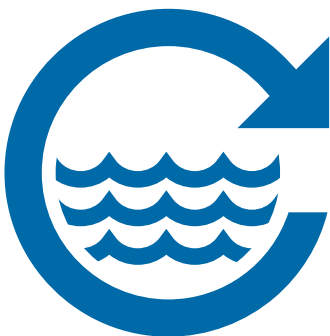
Green Water  
82%

Grey Water  
7%

### WATER FOOTPRINT - IMPORTED



### RENEWABLE WATER



Total

16.61 km<sup>3</sup>

Per Person

1 044 m<sup>3</sup>

= 1 000 m<sup>3</sup>







SADC Ranking: Renewable Water per person

10<sup>th</sup>

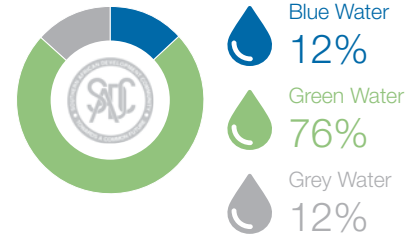
= Position



## MAJOR AGRICULTURAL EXPORTS

Tea	Ground Nuts	Sugar	Tobacco
Tonnage			
42 494	42 134	94 068	222 106
Earning (million \$)			
\$ 73.6	\$ 38.9	\$ 43.3	\$ 662
Virtual Water Content (%)			
 <p>Blue Water 46%</p> <p>Green Water 54%</p> <p>Grey Water 0%</p>	 <p>Blue Water 0%</p> <p>Green Water 96%</p> <p>Grey Water 4%</p>	 <p>Blue Water 50%</p> <p>Green Water 45%</p> <p>Grey Water 5%</p>	 <p>Blue Water 0%</p> <p>Green Water 88%</p> <p>Grey Water 12%</p>

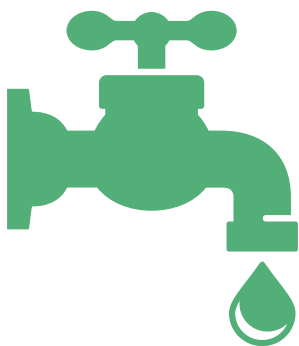
## SADC WATER FOOTPRINT OF IMPORTS



## DAM STORAGE/CAPACITY



## WATER WITHDRAWALS



SADC Ranking: Water Withdrawal per person 8<sup>th</sup>



# Climate Resilient Infrastructure Development Facility (CRIDF)

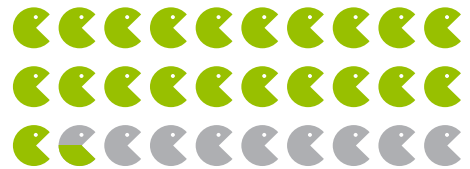
## GINI INDEX

Gini 44.41



## CALORIE CONSUMPTION

2 150 caloric intake per person per day



## HAPPY PLANET INDEX

42.46



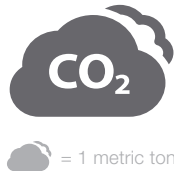
## HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.42



## CO<sub>2</sub> EMISSIONS

0.08 metric tons per capita



## ENERGY USE

No data  
oil equivalent per capita

 = 100 kg

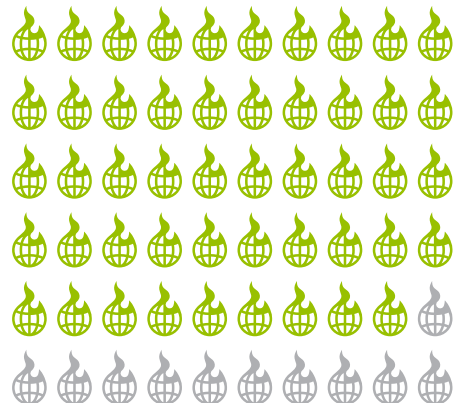


## CLIMATE VULNERABILITY INDEX

0.49



 = 0.01







# Mozambique



## GROSS DOMESTIC PRODUCT

GDP \$ 14 243 717 484.46

\$ = \$ 10 Billion

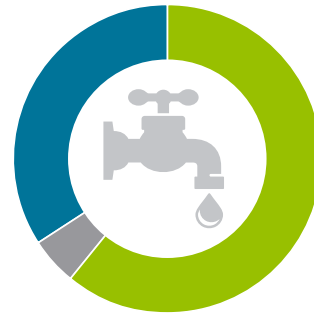


## CONTRIBUTION TO GDP



- 29% Agriculture  
Value added to GDP (%)
- 24% Industry  
Value added to GDP (%)
- 47% Services  
Value added to GDP (%)

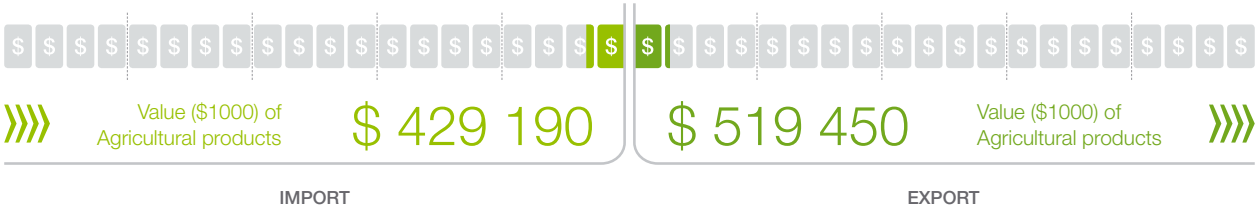
## WATER WITHDRAWAL PER SECTOR



- 70% Agriculture
- 4% Industry
- 26% Urban

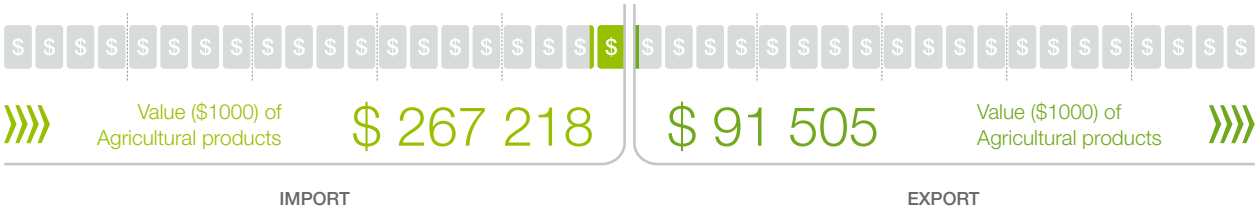
## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



## IMPORTS AND EXPORTS WITHIN SADC

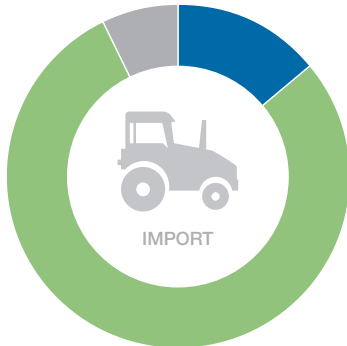
\$ = \$ 250 000 000





# Mozambique

## WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT



Blue Water 14%

Green Water 79%

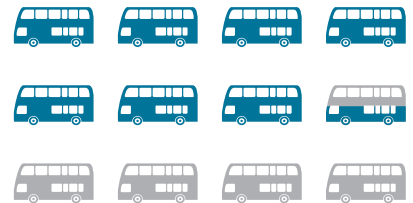
Grey Water 7%

## WATER FOOTPRINT



1 113 m<sup>3</sup>  
per person per annum

= 125 m<sup>3</sup>



## WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT

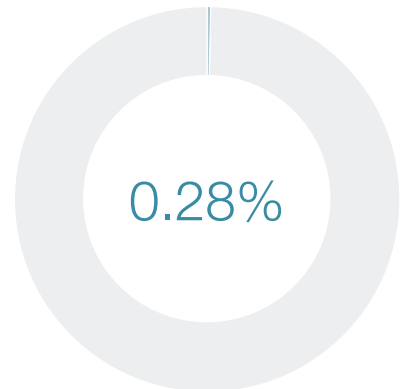


Blue Water 15%

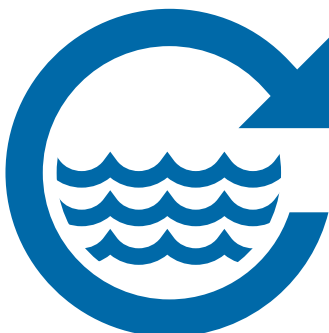
Green Water 84%

Grey Water 1%

## WATER FOOTPRINT - IMPORTED



## RENEWABLE WATER



Per Person

4 080 m<sup>3</sup>

= 1 000 m<sup>3</sup>



SADC Ranking: Renewable Water per person

4<sup>th</sup>

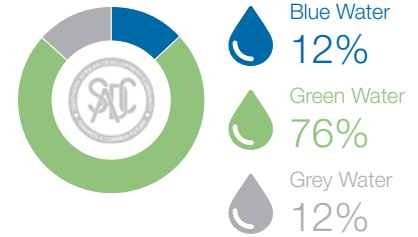
= Position



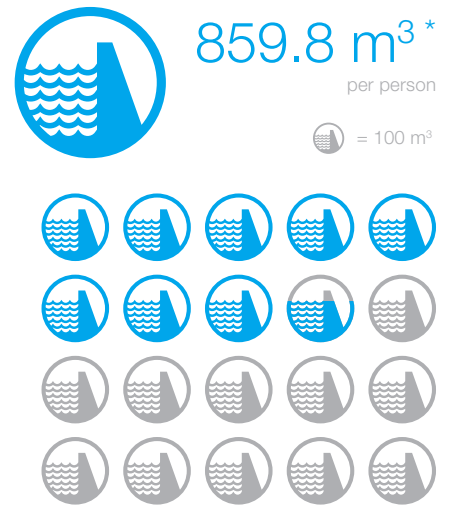
## MAJOR AGRICULTURAL EXPORTS

Tobacco	Sugar	Oil Seed	Wheat
Tonnage			
55 942	265 030	28 206	7 290
Earning (million \$)			
\$ 227.8	\$ 146.7	\$ 18.3	\$ 31
Virtual Water Content (%)			
  Blue Water 0% Green Water 100% Grey Water 0%	  Blue Water 23% Green Water 76% Grey Water 1%	  Blue Water 0% Green Water 100% Grey Water 0%	  Blue Water 5% Green Water 95% Grey Water 0%

## SADC WATER FOOTPRINT OF IMPORTS

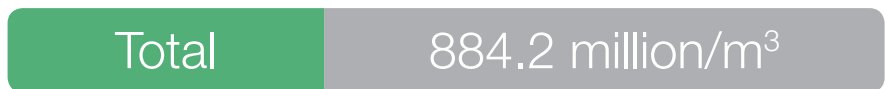
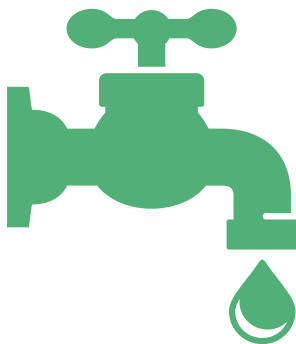


## DAM STORAGE/CAPACITY



\* Excludes Cahora Bassa

## WATER WITHDRAWALS



SADC Ranking: Water Withdrawal per person 9<sup>th</sup>



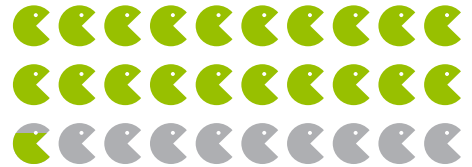
GINI INDEX

Gini 45.75



CALORIE CONSUMPTION

2 070 caloric intake per person per day



HAPPY PLANET INDEX

35.75



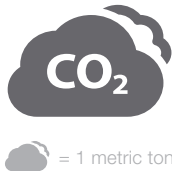
HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.33



CO<sub>2</sub> EMISSIONS

0.12 metric tons per capita

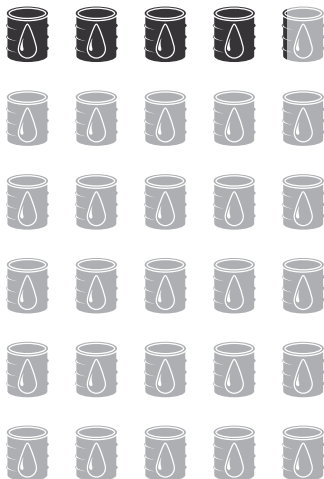


ENERGY USE

415.03 kg oil equivalent per capita



= 100 kg

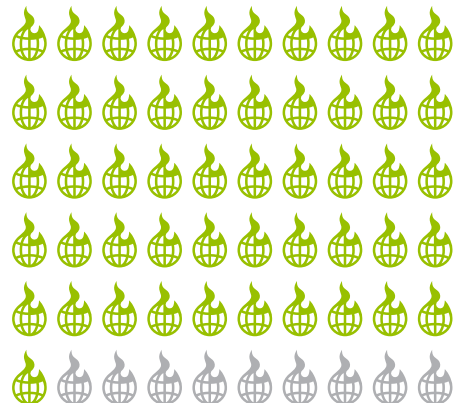


CLIMATE VULNERABILITY INDEX

0.51



= 0.01





# Namibia



## GROSS DOMESTIC PRODUCT

GDP \$ 13 072 278 942.99

\$ = \$ 10 Billion

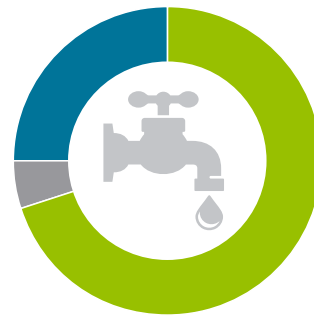


## CONTRIBUTION TO GDP



- 7% Agriculture Value added to GDP (%)
- 30% Industry Value added to GDP (%)
- 63% Services Value added to GDP (%)

## WATER WITHDRAWAL PER SECTOR



- 70% Agriculture
- 5% Industry
- 25% Urban

## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



Value (\$1000) of Agricultural products \$ 601 291

IMPORT

Value (\$1000) of Agricultural products \$ 563 814

EXPORT

## IMPORTS AND EXPORTS WITHIN SADC

\$ = \$ 250 000 000



Value (\$1000) of Agricultural products \$ 23 774

IMPORT

Value (\$1000) of Agricultural products \$ 91 673

EXPORT



WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT



Blue Water 10%

Green Water 76%

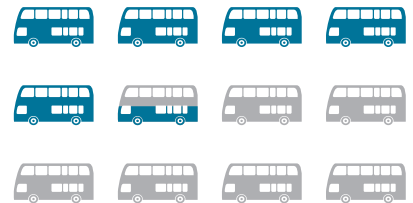
Grey Water 14%

WATER FOOTPRINT



683 m<sup>3</sup>  
per person per annum

= 125 m<sup>3</sup>



WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT

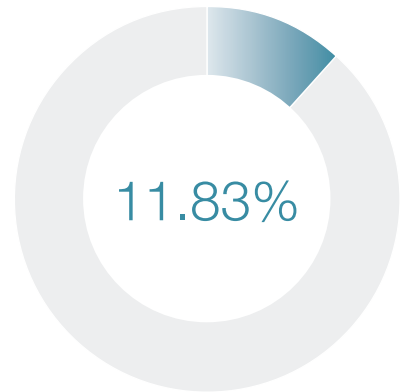


Blue Water 14%

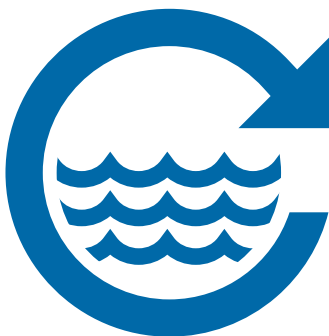
Green Water 84%

Grey Water 2%

WATER FOOTPRINT - IMPORTED



RENEWABLE WATER



Per Person

2 778 m<sup>3</sup>

= 1 000 m<sup>3</sup>




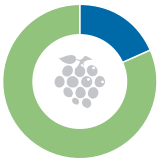
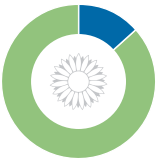

SADC Ranking: Renewable Water per person

5<sup>th</sup>

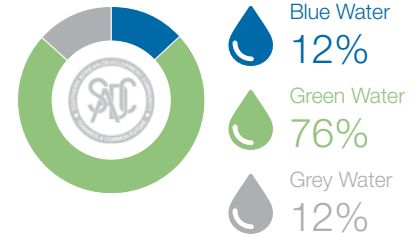
= Position



## MAJOR AGRICULTURAL EXPORTS

Beer	Grapes	Oil Seed	Fermented Beverages
Tonnage			
163 121	24 611	4 590	28 953
Earning (million \$)			
\$ 159	\$ 35.7	\$ 1.6	\$ 45.5
Virtual Water Content (%)			
 <p>Blue Water 5%</p> <p>Green Water 85%</p> <p>Grey Water 10%</p>	 <p>Blue Water 16%</p> <p>Green Water 70%</p> <p>Grey Water 14%</p>	 <p>Blue Water 12%</p> <p>Green Water 83%</p> <p>Grey Water 5%</p>	 <p>Blue Water 0%</p> <p>Green Water 82%</p> <p>Grey Water 18%</p>

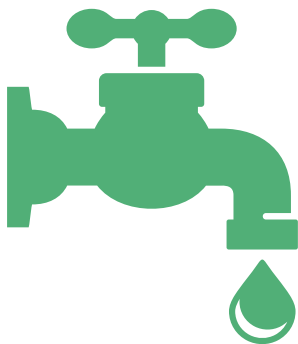
## SADC WATER FOOTPRINT OF IMPORTS



## DAM STORAGE/CAPACITY



## WATER WITHDRAWALS



Per Person

127 m<sup>3</sup>

1 icon = 100



SADC Ranking: Water Withdrawal per person

4<sup>th</sup>

1 icon = Position



# Climate Resilient Infrastructure Development Facility (CRIDF)

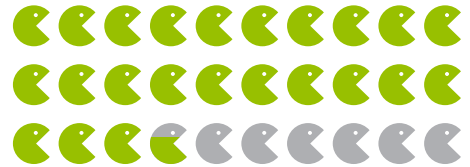
## GINI INDEX

Gini 69.12



## CALORIE CONSUMPTION

2 360 caloric intake per person per day



## HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.61



## HAPPY PLANET INDEX

38.88

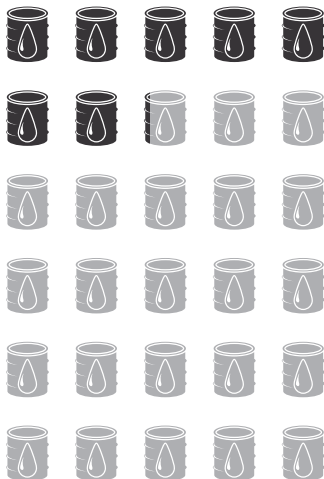


## ENERGY USE

716.6 kg oil equivalent per capita

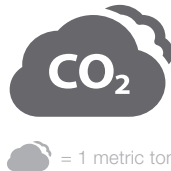


= 100 kg



## CO<sub>2</sub> EMISSIONS

1.46 metric tons per capita

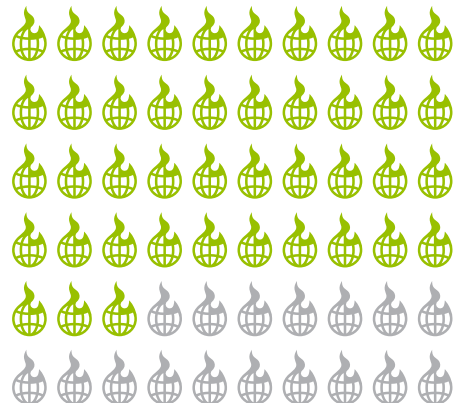


## CLIMATE VULNERABILITY INDEX

0.43



= 0.01







# South Africa



## GROSS DOMESTIC PRODUCT

GDP \$ 384 312 674 445.53

\$ = \$ 10 Billion

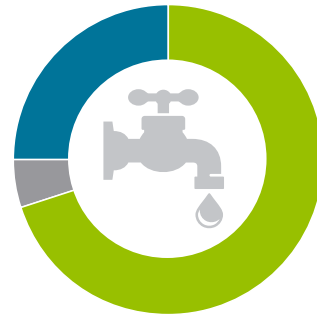


## CONTRIBUTION TO GDP



- 2% Agriculture Value added to GDP (%)
- 28% Industry Value added to GDP (%)
- 70% Services Value added to GDP (%)

## WATER WITHDRAWAL PER SECTOR



- 70% Agriculture
- 5% Industry
- 25% Urban

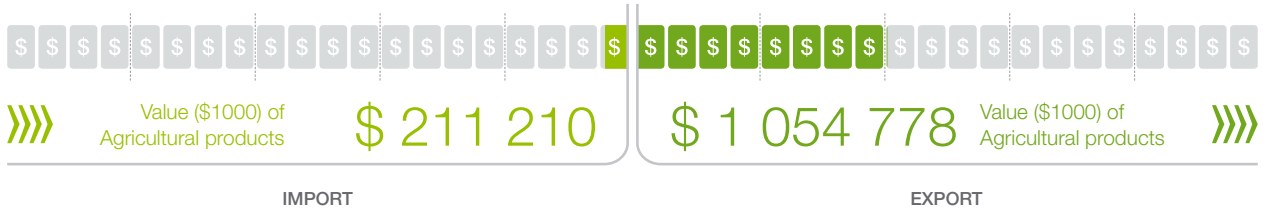
## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



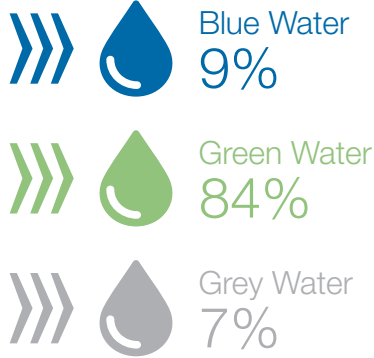
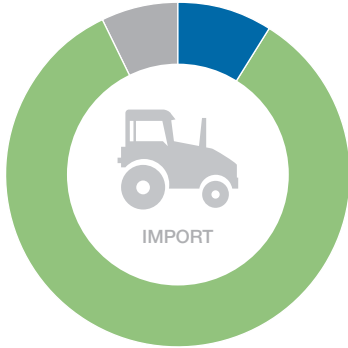
## IMPORTS AND EXPORTS WITHIN SADC

\$ = \$ 250 000 000





WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT

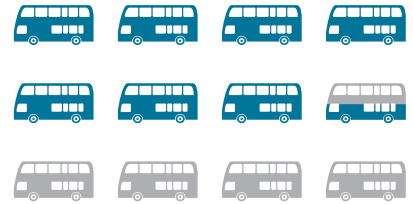


WATER FOOTPRINT

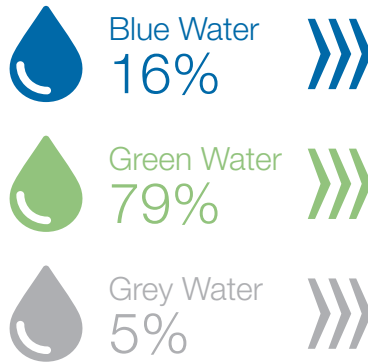


931 m<sup>3</sup>  
per person per annum

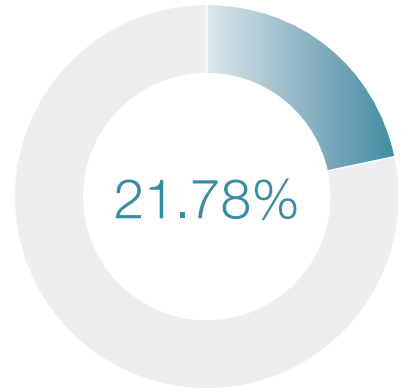
= 125 m<sup>3</sup>



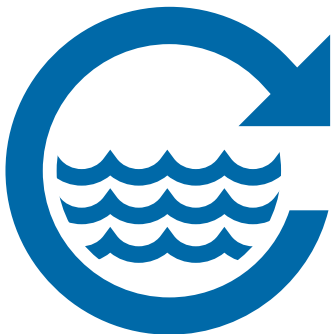
WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT



WATER FOOTPRINT - IMPORTED



RENEWABLE WATER



Total

45.2 km<sup>3</sup>

Per Person

869 m<sup>3</sup>

= 1 000 m<sup>3</sup>



SADC Ranking: Renewable Water per person

12<sup>th</sup>

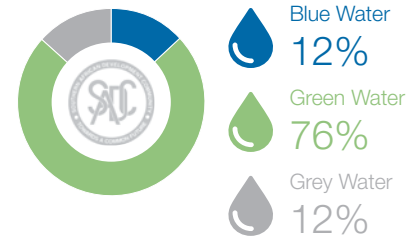
= Position



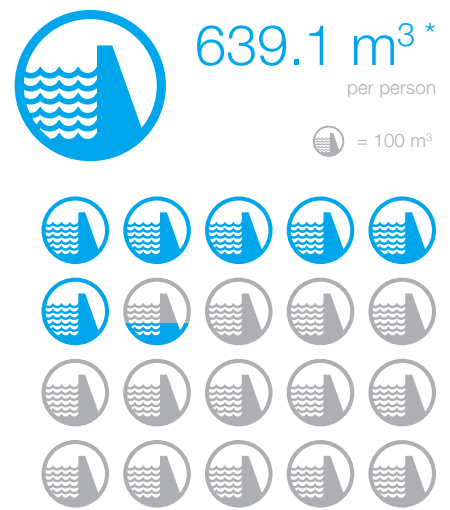
## MAJOR AGRICULTURAL EXPORTS

Citrus	Grapes	Apples	Wine
Tonnage			
1 564 914	288 841	570 907	412 846
Earning (million \$)			
\$ 901,9	\$ 498	\$ 476.6	\$ 730.3
Virtual Water Content (%)			
 Blue Water 37% Green Water 57% Grey Water 6%	 Blue Water 37% Green Water 51% Grey Water 12%	 Blue Water 42% Green Water 53% Grey Water 5%	 Blue Water 37% Green Water 51% Grey Water 12%

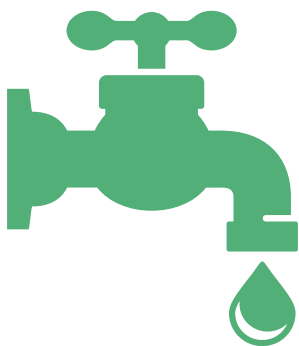
## SADC WATER FOOTPRINT OF IMPORTS



## DAM STORAGE/CAPACITY



## WATER WITHDRAWALS



SADC Ranking: Water Withdrawal per person 3<sup>rd</sup>



# Climate Resilient Infrastructure Development Facility (CRIDF)

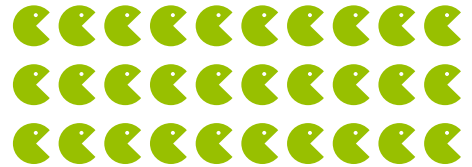
## GINI INDEX

Gini 60.85



## CALORIE CONSUMPTION

3 000 caloric intake per person per day



## HAPPY PLANET INDEX

28.19



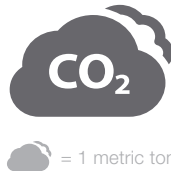
## HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.63



## CO<sub>2</sub> EMISSIONS

9.04 metric tons per capita

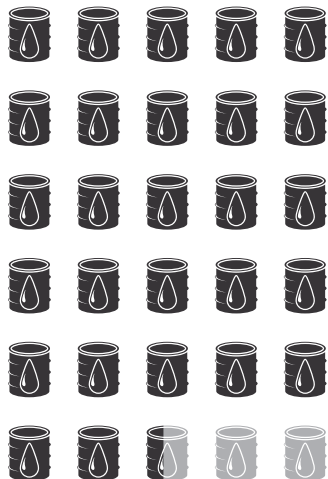


## ENERGY USE

2 740.85 kg oil equivalent per capita



 = 100 kg

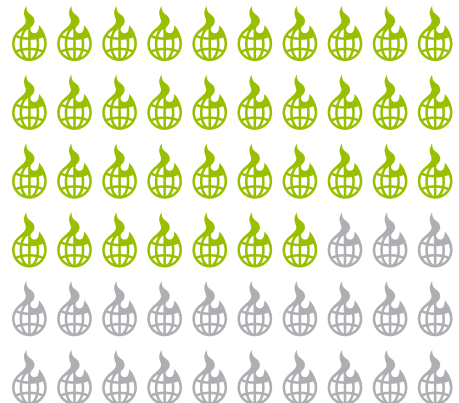


## CLIMATE VULNERABILITY INDEX

0.37



 = 0.01





# Swaziland



## GROSS DOMESTIC PRODUCT

GDP \$ 3 744 472 287.07

\$ = \$ 10 Billion

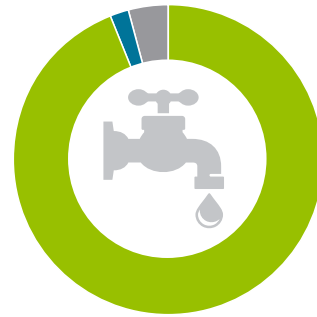


## CONTRIBUTION TO GDP



- 7% Agriculture Value added to GDP (%)
- 48% Industry Value added to GDP (%)
- 45% Services Value added to GDP (%)

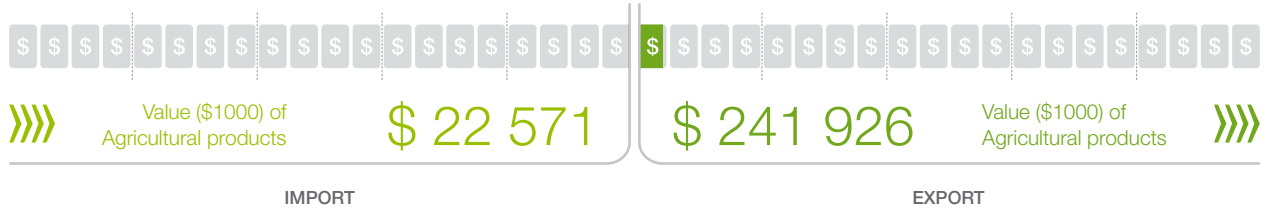
## WATER WITHDRAWAL PER SECTOR



- 94% Agriculture
- 2% Industry
- 4% Urban

## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



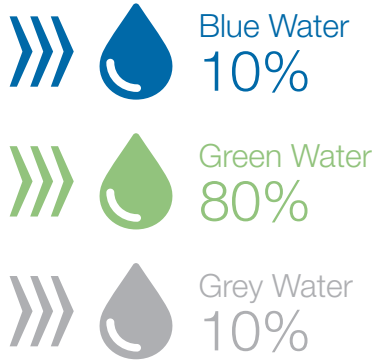
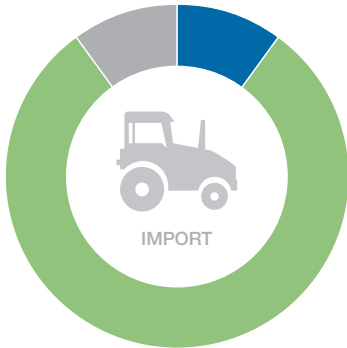
## IMPORTS AND EXPORTS WITHIN SADC

\$ = \$ 250 000 000

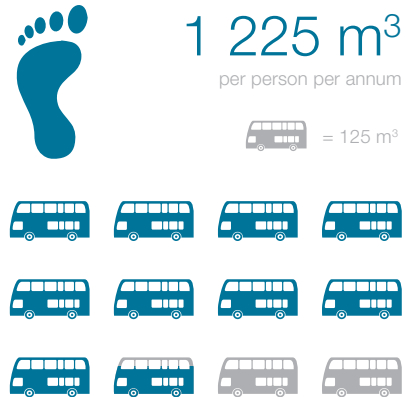




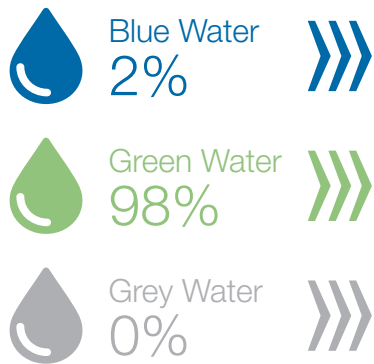
WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT



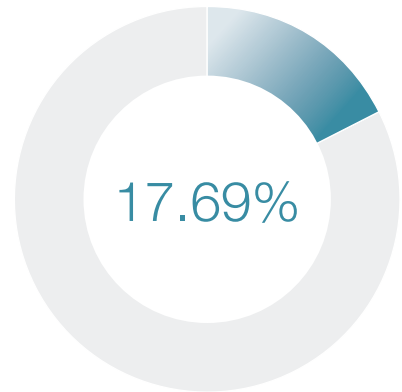
WATER FOOTPRINT



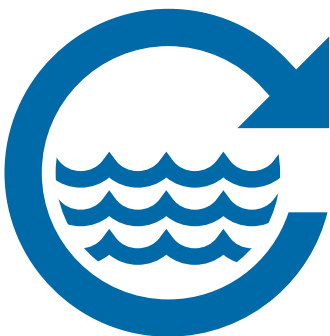
WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT



WATER FOOTPRINT - IMPORTED



RENEWABLE WATER



Per Person

2 178 m<sup>3</sup>

= 1 000 m<sup>3</sup>






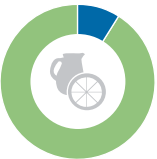
SADC Ranking: Renewable Water per person

7<sup>th</sup>

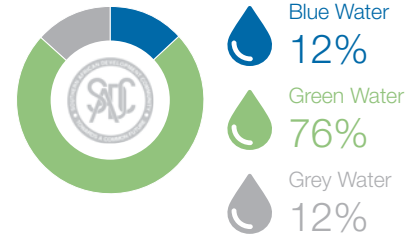
= Position



## MAJOR AGRICULTURAL EXPORTS

Sugar	Wheat	Citrus	Fruit Juice
Tonnage			
301 870	13 100	27 846	1 448
Earning (million \$)			
\$ 195	\$ 5.3	\$ 25.8	\$ 2.7
Virtual Water Content (%)			
 <p>Blue Water 55%</p> <p>Green Water 45%</p> <p>Grey Water 0%</p>	 <p>Blue Water 0%</p> <p>Green Water 100%</p> <p>Grey Water 0%</p>	 <p>Blue Water 9%</p> <p>Green Water 91%</p> <p>Grey Water 0%</p>	 <p>Blue Water 8%</p> <p>Green Water 92%</p> <p>Grey Water 0%</p>

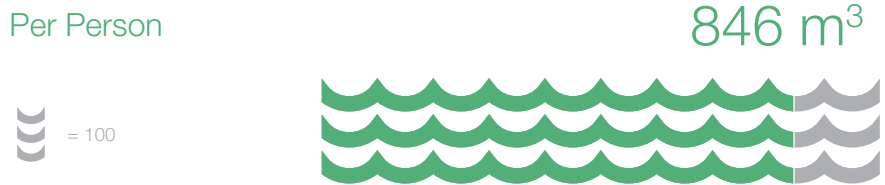
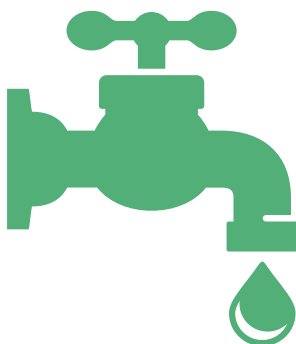
## SADC WATER FOOTPRINT OF IMPORTS



## DAM STORAGE/CAPACITY



## WATER WITHDRAWALS

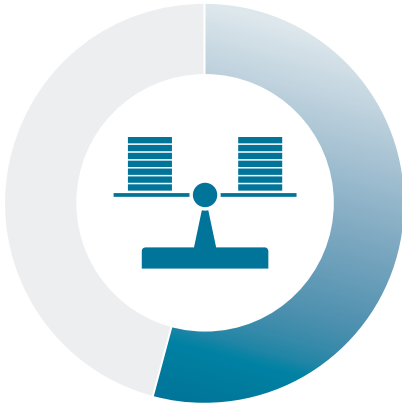


SADC Ranking: Water Withdrawal per person 1<sup>st</sup>



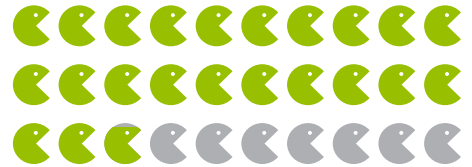
GINI INDEX

Gini 54.72



CALORIE CONSUMPTION

2 290 caloric intake per person per day



HAPPY PLANET INDEX

No data



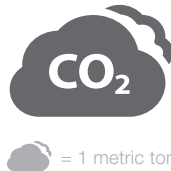
HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.54



CO<sub>2</sub> EMISSIONS

0.86 metric tons per capita



ENERGY USE

No data  
oil equivalent per capita

 = 100 kg

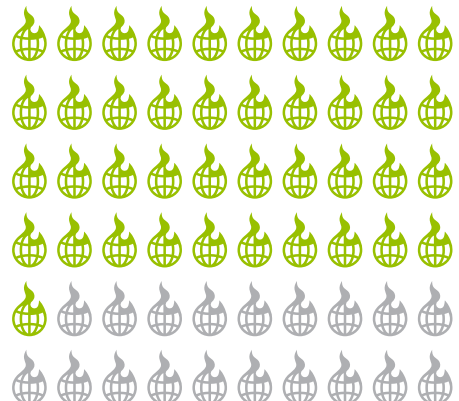


CLIMATE VULNERABILITY INDEX

0.41



 = 0.01





# Tanzania



## GROSS DOMESTIC PRODUCT

GDP \$ 28 242 425 168.11

\$ = \$ 10 Billion

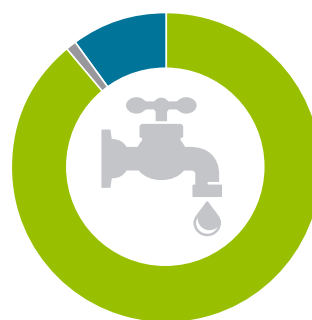


## CONTRIBUTION TO GDP



- 27% Agriculture Value added to GDP (%)
- 25% Industry Value added to GDP (%)
- 48% Services Value added to GDP (%)

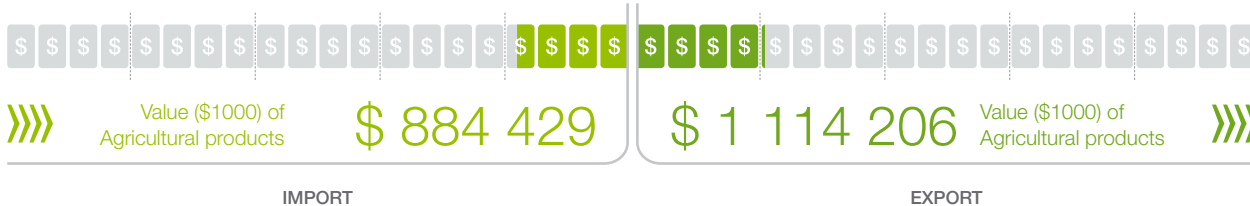
## WATER WITHDRAWAL PER SECTOR



- 89% Agriculture
- 1% Industry
- 10% Urban

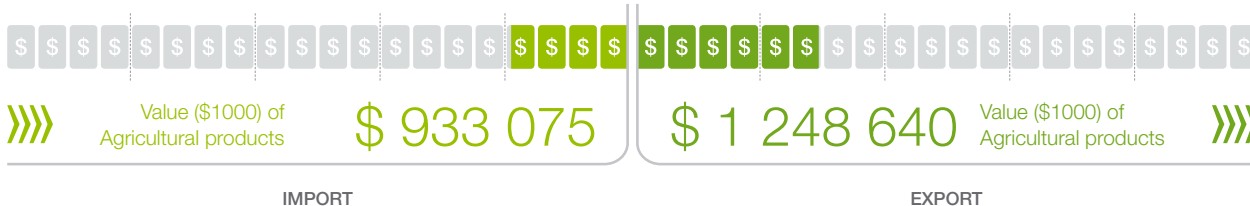
## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



## IMPORTS AND EXPORTS WITHIN SADC

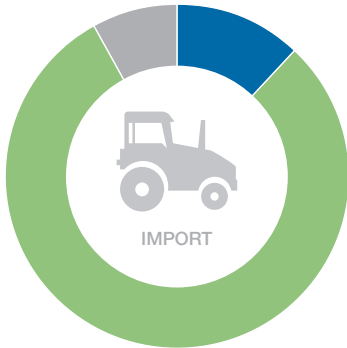
\$ = \$ 250 000 000





Tanzania

WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT



Blue Water 12%

Green Water 80%

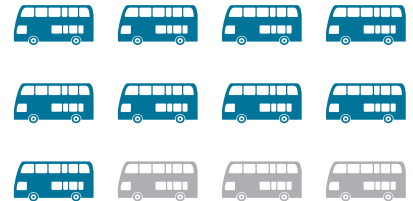
Grey Water 8%

WATER FOOTPRINT



1 127 m<sup>3</sup>  
per person per annum

= 125 m<sup>3</sup>



WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT

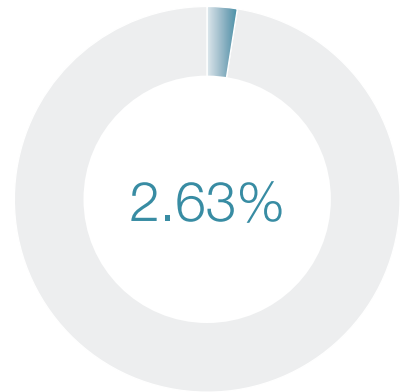


Blue Water 4%

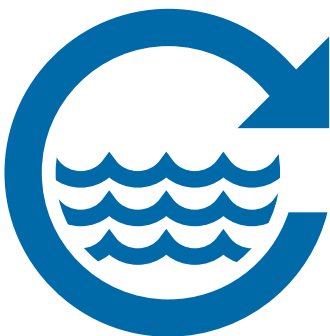
Green Water 96%

Grey Water 0%

WATER FOOTPRINT - IMPORTED



RENEWABLE WATER



Total

86.59 km<sup>3</sup>

Per Person

1 812 m<sup>3</sup>

= 1 000 m<sup>3</sup>






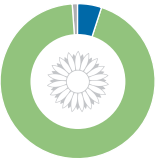
SADC Ranking: Renewable Water per person

8<sup>th</sup>

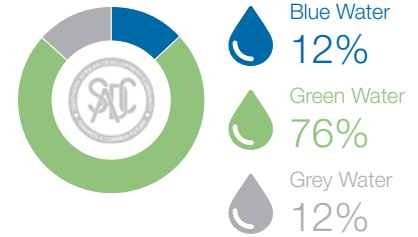
= Position



## MAJOR AGRICULTURAL EXPORTS

Nuts	Coffee	Tea	Oil Seed
Tonnage			
154 997	62 652	26 372	104 669
Earning (million \$)			
\$ 189	\$ 163	\$ 55	\$ 140
Virtual Water Content (%)			
 <p>Blue Water 3%</p> <p>Green Water 97%</p> <p>Grey Water 0%</p>	 <p>Blue Water 100%</p> <p>Green Water 0%</p> <p>Grey Water 0%</p>	 <p>Blue Water 4%</p> <p>Green Water 94%</p> <p>Grey Water 2%</p>	 <p>Blue Water 5%</p> <p>Green Water 94%</p> <p>Grey Water 1%</p>

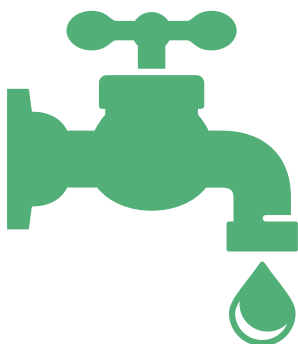
## SADC WATER FOOTPRINT OF IMPORTS



## DAM STORAGE/CAPACITY



## WATER WITHDRAWALS



Per Person

108 m<sup>3</sup>

1 icon = 100



SADC Ranking: Water Withdrawal per person

6<sup>th</sup>

1 icon = Position



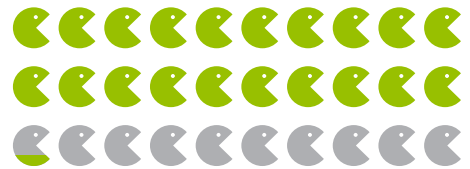
GINI INDEX

Gini 35.34



CALORIE CONSUMPTION

2 020 caloric intake per person per day



HAPPY PLANET INDEX

30.74



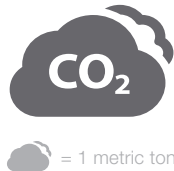
HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.48



CO<sub>2</sub> EMISSIONS

0.15 metric tons per capita



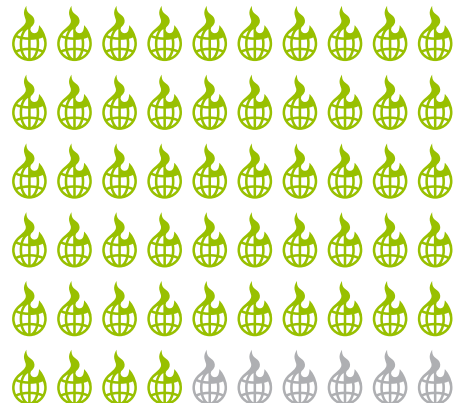
ENERGY USE

447.57 kg oil equivalent per capita



CLIMATE VULNERABILITY INDEX

0.54





# Zambia



## GROSS DOMESTIC PRODUCT

GDP \$ 20 590 283 021.55

\$ = \$ 10 Billion

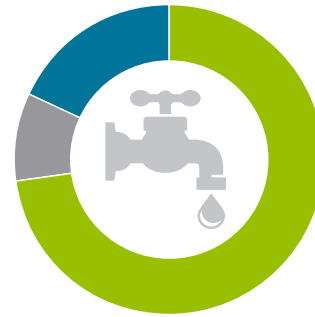


## CONTRIBUTION TO GDP



- 18% Agriculture Value added to GDP (%)
- 37% Industry Value added to GDP (%)
- 45% Services Value added to GDP (%)

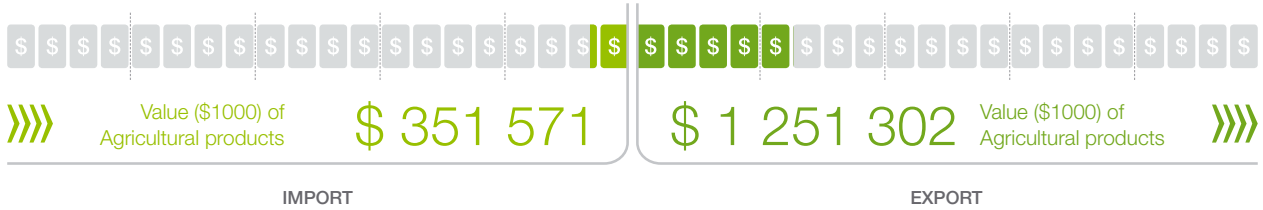
## WATER WITHDRAWAL PER SECTOR



- 73% Agriculture
- 9% Industry
- 18% Urban

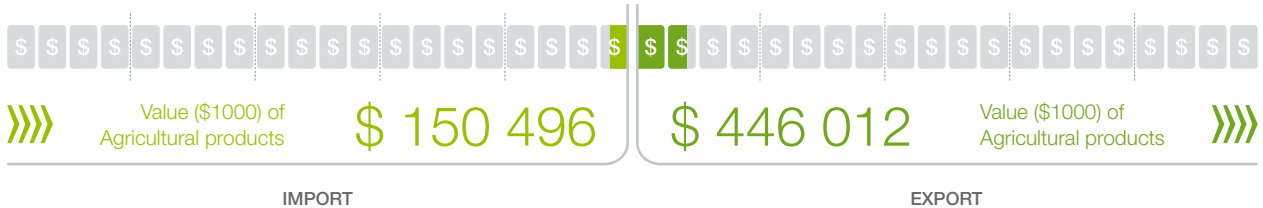
## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



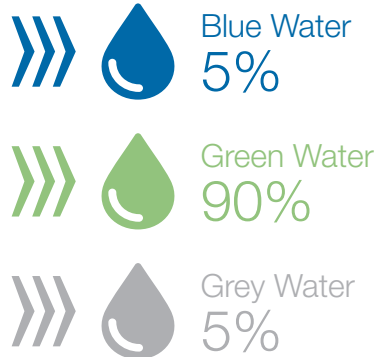
## IMPORTS AND EXPORTS WITHIN SADC

\$ = \$ 250 000 000

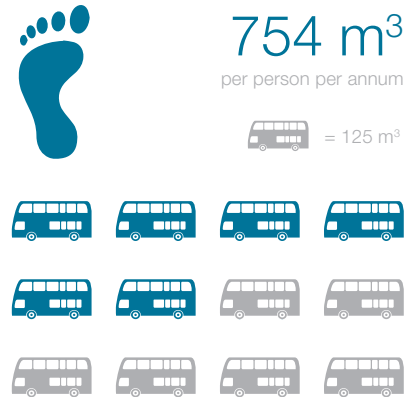




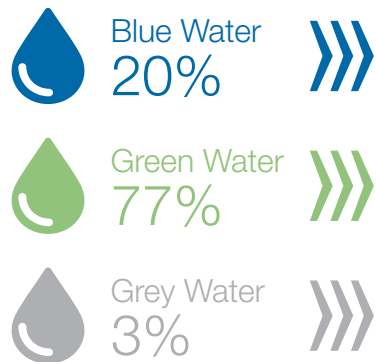
WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT



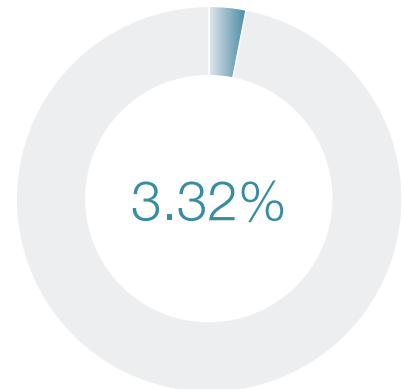
WATER FOOTPRINT



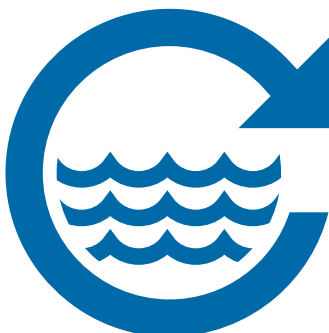
WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT



WATER FOOTPRINT - IMPORTED




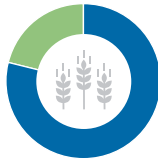

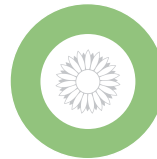
RENEWABLE WATER



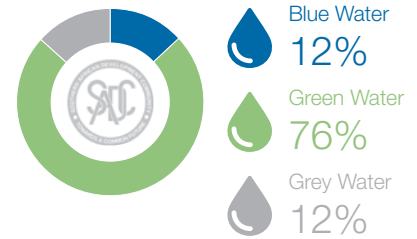
SADC Ranking: Renewable Water per person 3<sup>rd</sup>



## MAJOR AGRICULTURAL EXPORTS

Maize	Wheat	Tobacco	Oil Seed
Tonnage			
725 588	35 203	37 924	58 123
Earning (million \$)			
\$ 419	\$ 29.4	\$ 159	\$ 21
Virtual Water Content (%)			
 Blue Water 0% Green Water 100% Grey Water 0%	 Blue Water 79% Green Water 21% Grey Water 0%	 Blue Water 0% Green Water 100% Grey Water 0%	 Blue Water 0% Green Water 100% Grey Water 0%

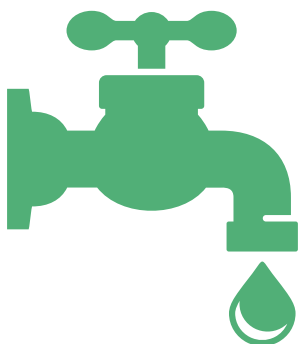
## SADC WATER FOOTPRINT OF IMPORTS



## DAM STORAGE/CAPACITY



## WATER WITHDRAWALS



Total 1 572 million/m<sup>3</sup>

Per Person

112 m<sup>3</sup>

 = 100



SADC Ranking: Water Withdrawal per person

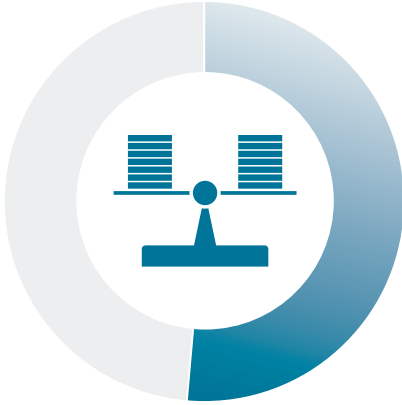
5<sup>th</sup>

 = Position



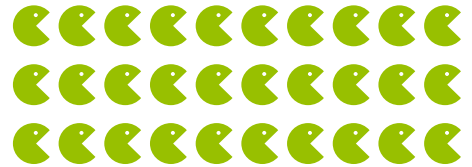
GINI INDEX

Gini 51.54



CALORIE CONSUMPTION

1 880 caloric intake per person per day



HAPPY PLANET INDEX

37.73



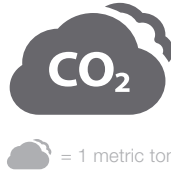
HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.45



CO<sub>2</sub> EMISSIONS

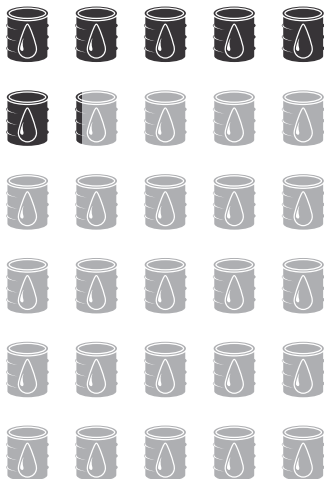
0.18 metric tons per capita



ENERGY USE

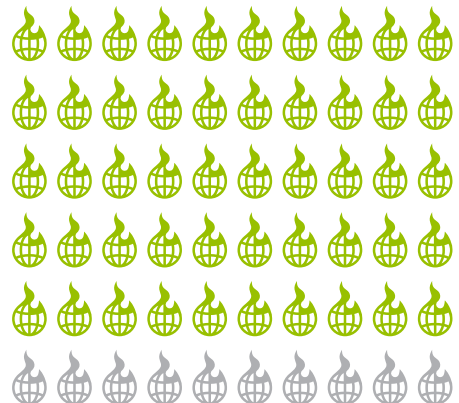
620.66 kg oil equivalent per capita

= 100 kg



CLIMATE VULNERABILITY INDEX

0.50







# Zimbabwe



## GROSS DOMESTIC PRODUCT

GDP \$ 9 802 360 203.02

\$ = \$ 10 Billion

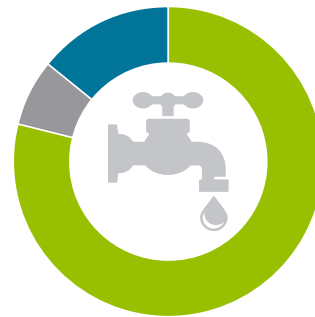


## CONTRIBUTION TO GDP



- 12% Agriculture Value added to GDP (%)
- 31% Industry Value added to GDP (%)
- 57% Services Value added to GDP (%)

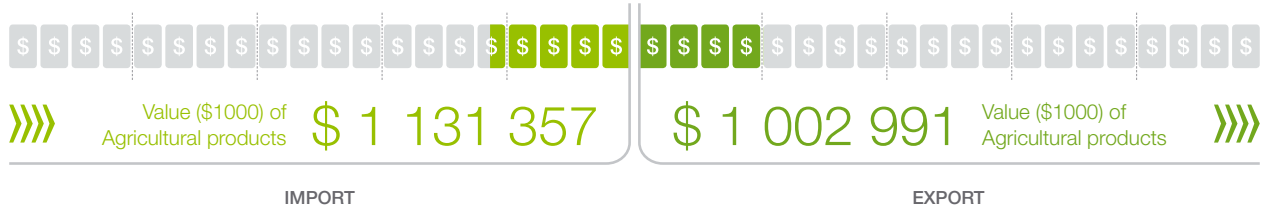
## WATER WITHDRAWAL PER SECTOR



- 79% Agriculture
- 7% Industry
- 14% Urban

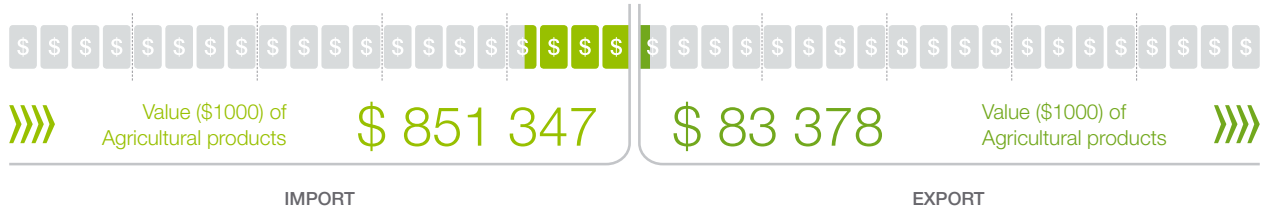
## TOTAL AGRICULTURAL IMPORTS AND EXPORTS

\$ = \$ 250 000 000



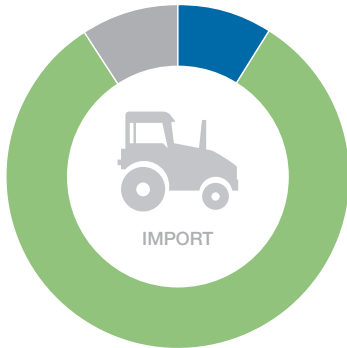
## IMPORTS AND EXPORTS WITHIN SADC

\$ = \$ 250 000 000





WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - IMPORT



Blue Water  
9%

Green Water  
82%

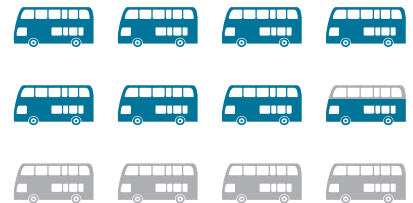
Grey Water  
9%

WATER FOOTPRINT



952 m<sup>3</sup>  
per person per annum

= 125 m<sup>3</sup>



WATER FOOTPRINT OF AGRICULTURAL PRODUCTS - EXPORT

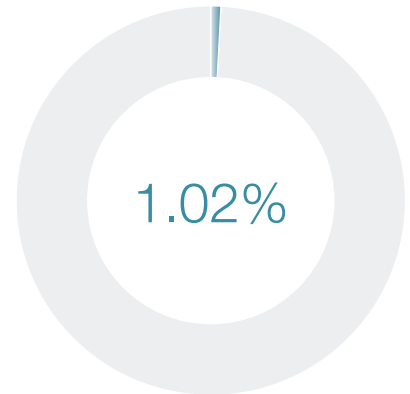


Blue Water  
14%

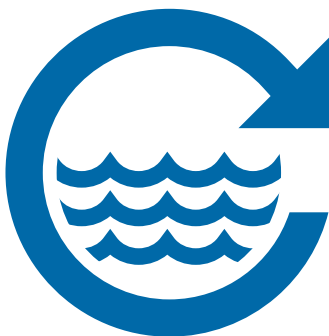
Green Water  
72%

Grey Water  
14%

WATER FOOTPRINT - IMPORTED



RENEWABLE WATER



Total

12.6 km<sup>3</sup>

Per Person

918 m<sup>3</sup>

= 1 000 m<sup>3</sup>



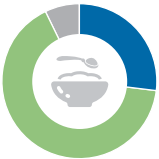


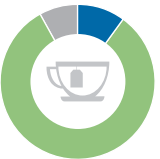
SADC Ranking: Renewable Water per person

11<sup>th</sup>

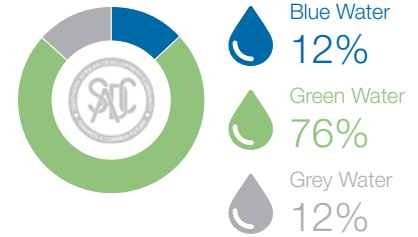
= Position



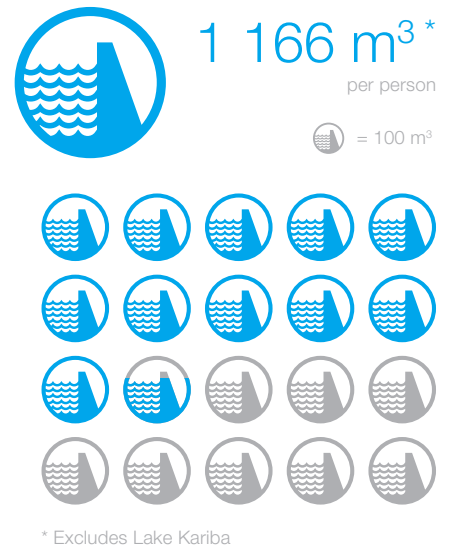
## MAJOR AGRICULTURAL EXPORTS

Sugar	Oil Cake	Tobacco	Tea
Tonnage			
158 000	56 321	139 435	11 540
Earning (million \$)			
\$ 103	\$ 16	\$ 826	\$ 17.7
Virtual Water Content (%)			
 <p>Blue Water 27%</p> <p>Green Water 66%</p> <p>Grey Water 7%</p>	 <p>Blue Water 32%</p> <p>Green Water 57%</p> <p>Grey Water 1%</p>	 <p>Blue Water 7%</p> <p>Green Water 69%</p> <p>Grey Water 34%</p>	 <p>Blue Water 10%</p> <p>Green Water 82%</p> <p>Grey Water 8%</p>

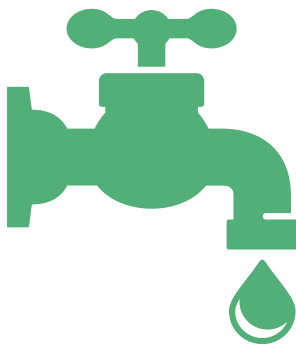
## SADC WATER FOOTPRINT OF IMPORTS



## DAM STORAGE/CAPACITY



## WATER WITHDRAWALS



SADC Ranking: Water Withdrawal per person 2<sup>nd</sup>



# Climate Resilient Infrastructure Development Facility (CRIDF)

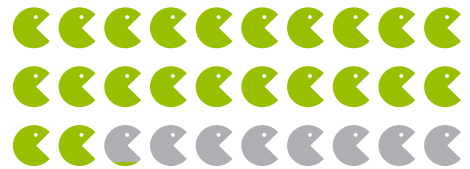
## GINI INDEX

Gini 50.1



## CALORIE CONSUMPTION

2 210 caloric intake per person per day



## HUMAN DEVELOPMENT INDEX (HDI)

HDI 0.4



## HAPPY PLANET INDEX

35.32

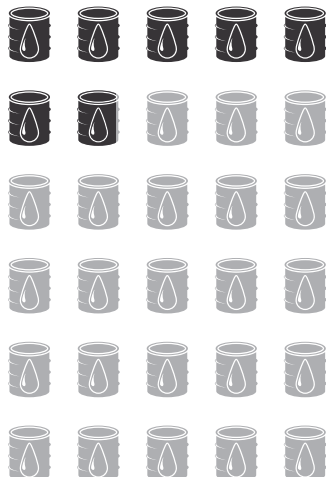


## ENERGY USE

697.08 kg oil equivalent per capita



= 100 kg



## CO<sub>2</sub> EMISSIONS

0.72 metric tons per capita



= 1 metric ton



## CLIMATE VULNERABILITY INDEX

0.47



= 0.01

