

Presentation to

PARLIAMENTARY PORTFOLIO COMMITTEE: ENVIRONMENT FORESTRY AND FISHERIES

on the

CLIMATE CHANGE BILL

9 May 2023

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UNPOISON

EARTH • AIR • WATER



saoso

SOUTH AFRICAN ORGANIC
SECTOR ORGANISATION

General Comment on Bill

- Insufficient guiding criteria to achieve the outcomes of this bill
- It relies on the outdated 2015 Nationally Determined Contributions under the UNFCCC
- Instead of targets set by SA's Cabinet last year under SA's climate action plan.
- Extremely weak provisions for compliance and enforcement making the bill ineffective
- Critical mitigation measures are have no deadlines such as:
 - An emissions trajectory
 - Carbon Budgets
 - Sector emissions targets
- Timeframes given to critical sectors to plan and start implementation are too long - don't reflect the urgency of the climate crisis
- The burden of implementation falls significantly onto provincial and municipal government
- It is not clear how local government will finance its commitments
- Provisions should be made for expertise, capacity building and financial support of the departments

South Africa's Agriculture Sector is extremely vulnerable climate change

CO₂



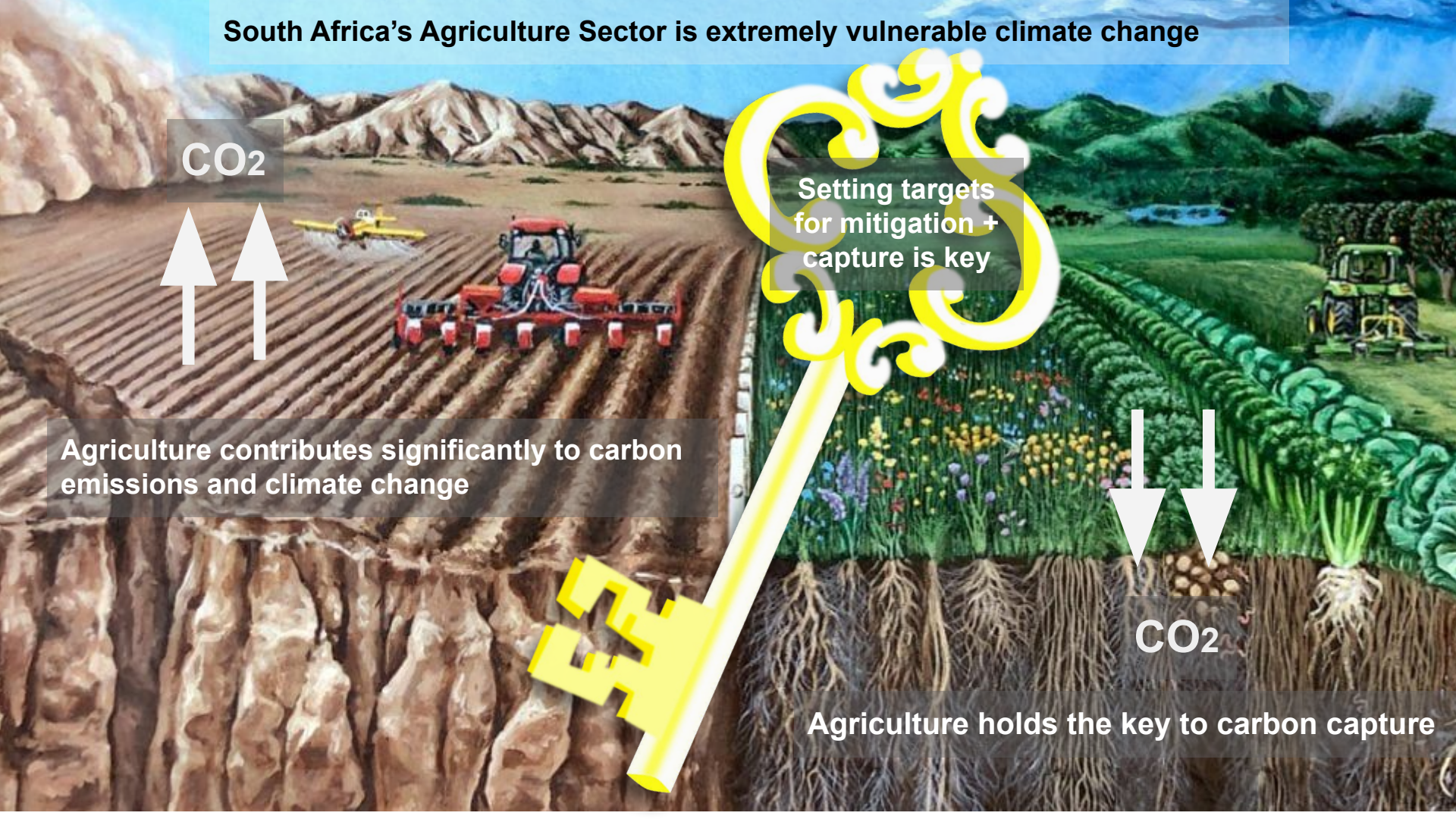
Agriculture contributes significantly to carbon emissions and climate change

Setting targets for mitigation + capture is key

CO₂



Agriculture holds the key to carbon capture



Environmental Impacts of Food and Agriculture

GREENHOUSE GASES



Food accounts for 29% of global greenhouse emissions.

LAND USE

79%

of habitable land is used for agriculture.



FRESHWATER USE



62%

of freshwater withdrawals are for agriculture.

WATER POLLUTION

70%

of Surface water

eutrophication is caused by agriculture.



BIODIVERSITY LOSS



-50%

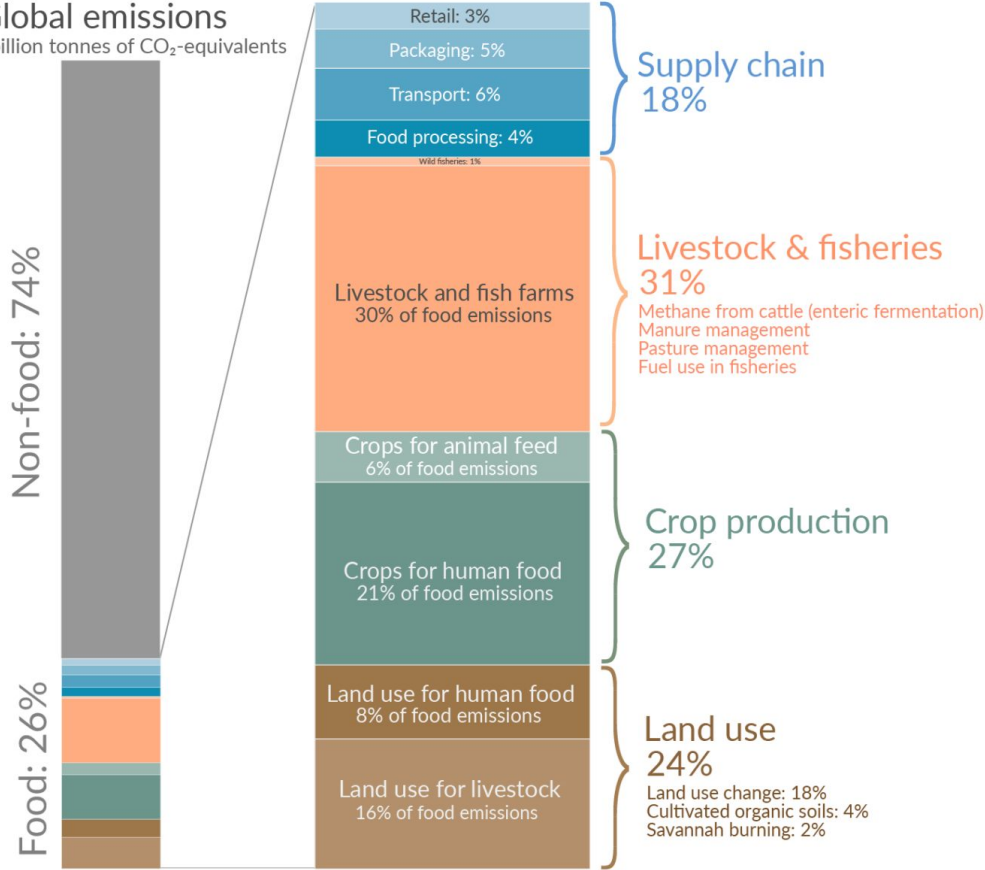
of Biodiversity

(excluding humans) is lost to livestock.

Breakdown of Global Agriculture Emission Sources

**New UN Study:
1/3 Global
Emissions Come
From Food
System**

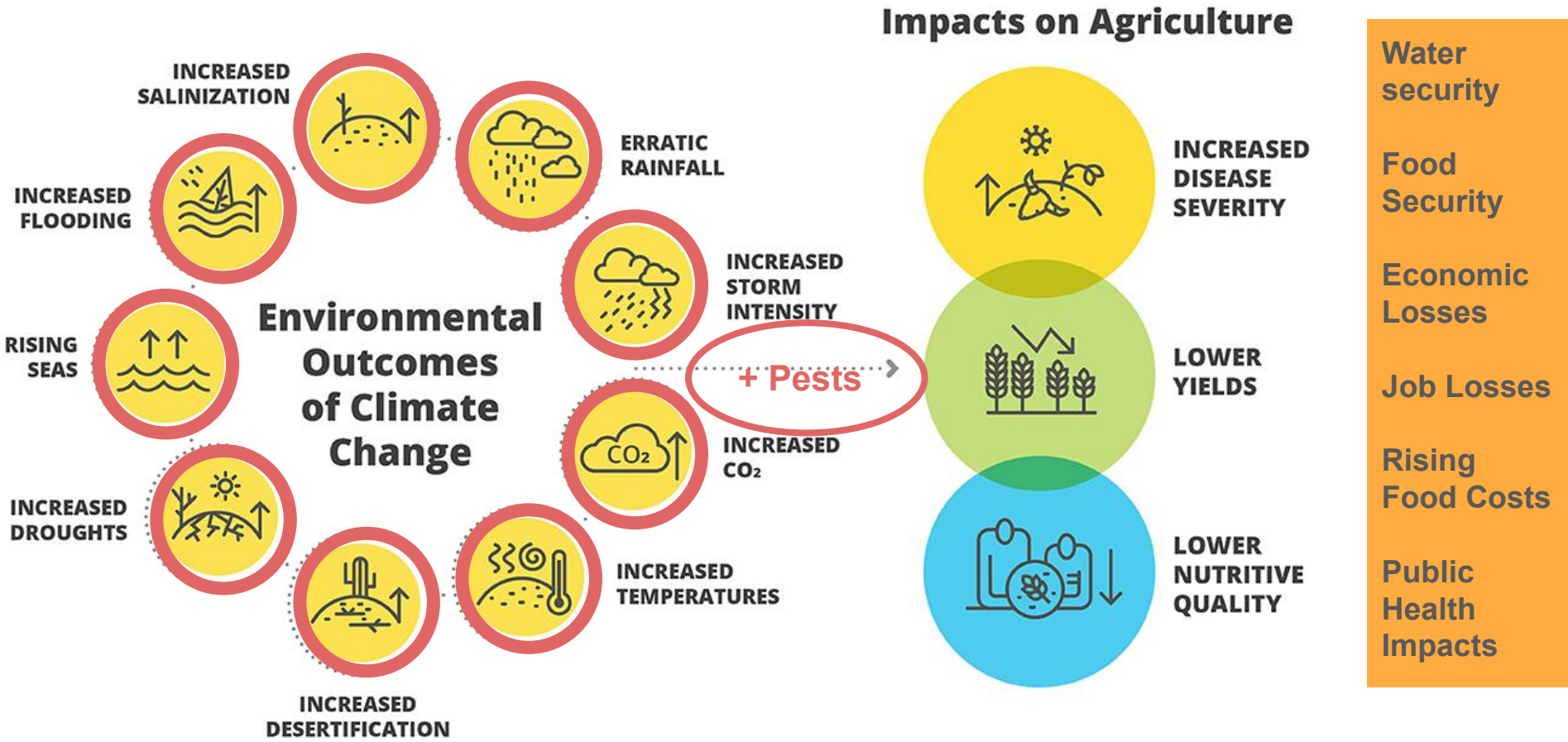
Global emissions
52.3 billion tonnes of CO₂-equivalents



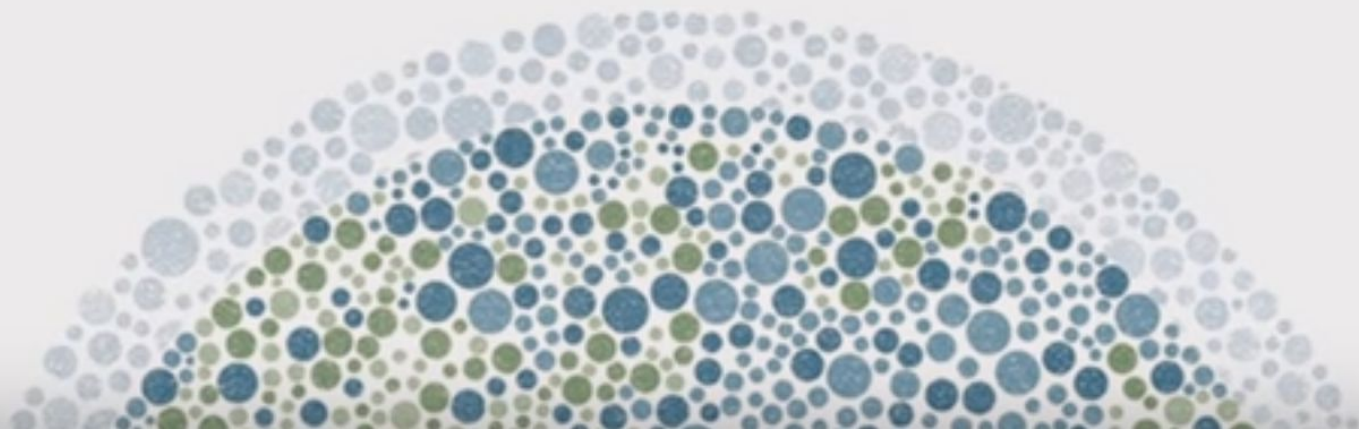
Data source: Joseph Poore & Thomas Nemecek (2018). Reducing food's environmental impacts through producers and consumers. Published in Science.

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Climate Change Impacts on the Food System



— The —
SOIL STORY



Nitrogen fertilisers

3% global GHG's

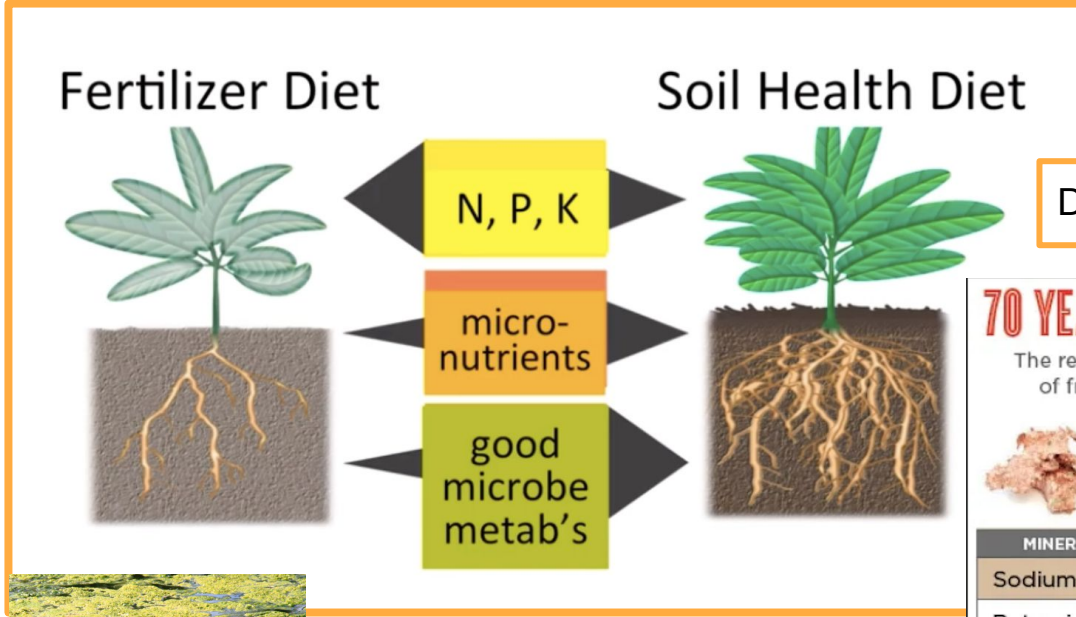
300 times more potent than Co2

Causes acid rain

Up to 50% of agricultural emissions

Increase salinity of soil

Causes algal blooms and ocean deadzones



Depletes Nutrients

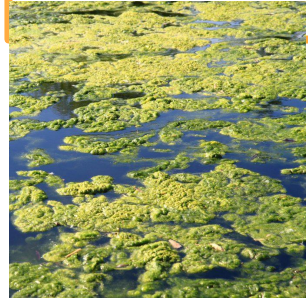
70 YEARS OF SOIL DEPLETION

The reduction in average mineral content of fruits and vegetables since 1940.†

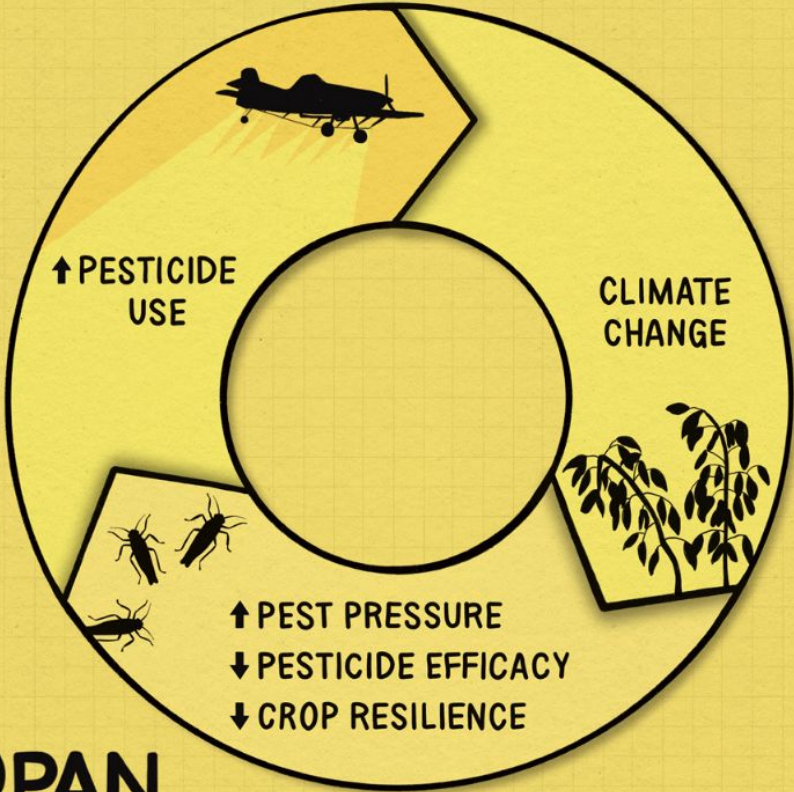


MINERAL	VEGETABLES	FRUITS
Sodium	-49%	-29%
Potassium	-16%	-19%
Magnesium	-24%	-16%
Calcium	-46%	-16%
Iron	-27%	-24%
Copper	-76%	-20%
Zinc	-59%	-27%

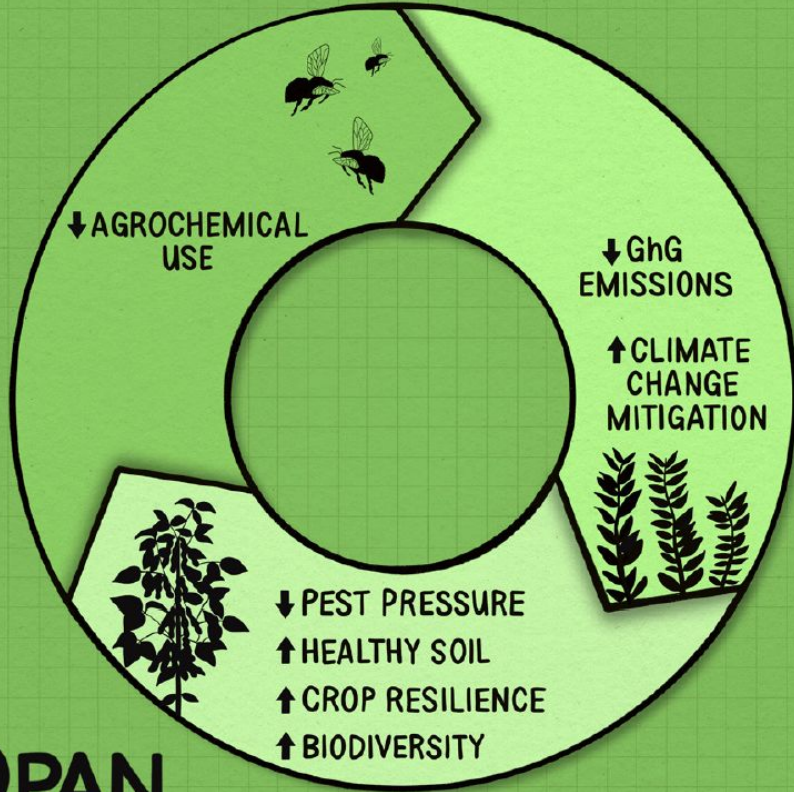
Less than half absorbed by plants. Up to 50% is wasted (becomes pollution)



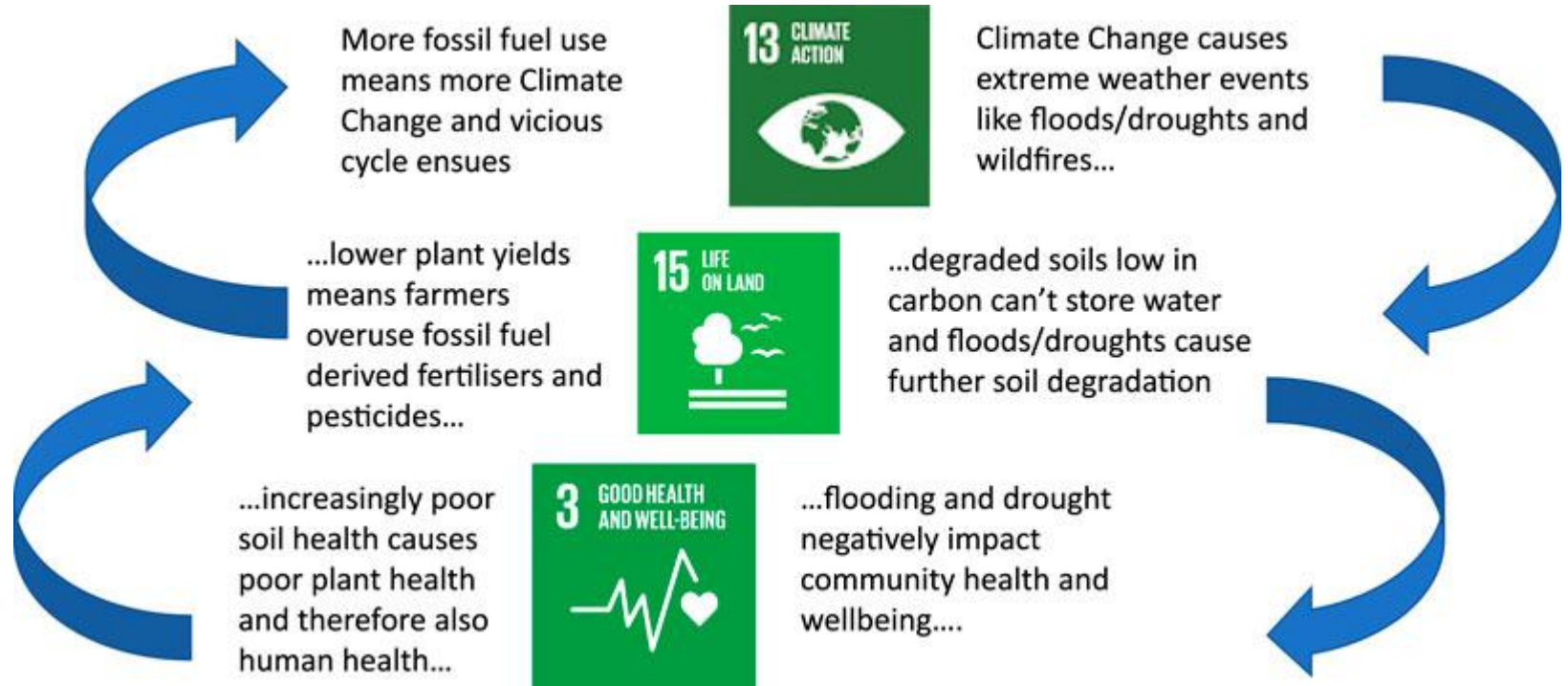
PESTICIDES & CLIMATE CHANGE: A VICIOUS CYCLE



AGROECOLOGY: A VIVACIOUS CYCLE

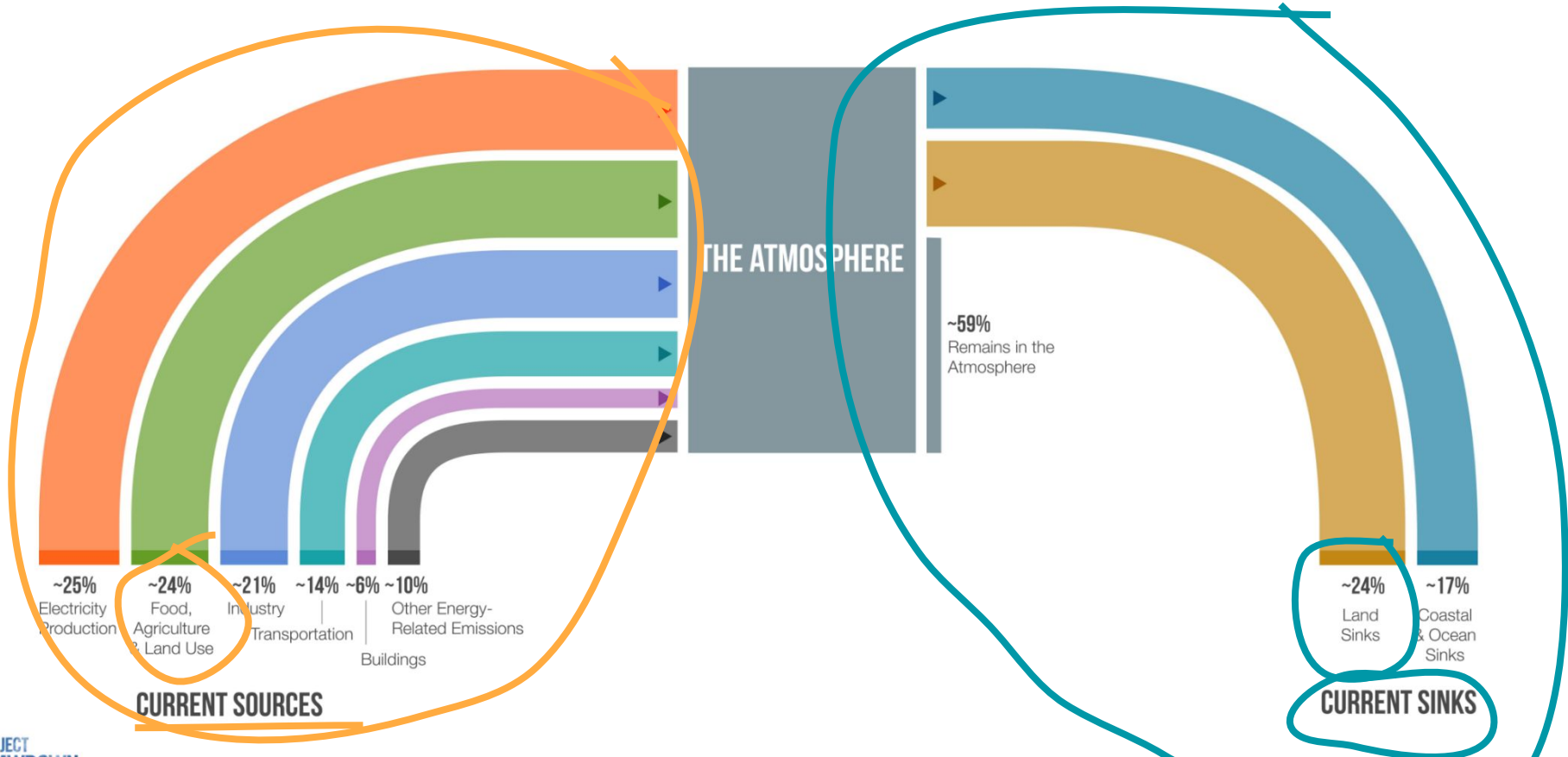


The Vicious Cycle of Soil Degradation + Climate Change

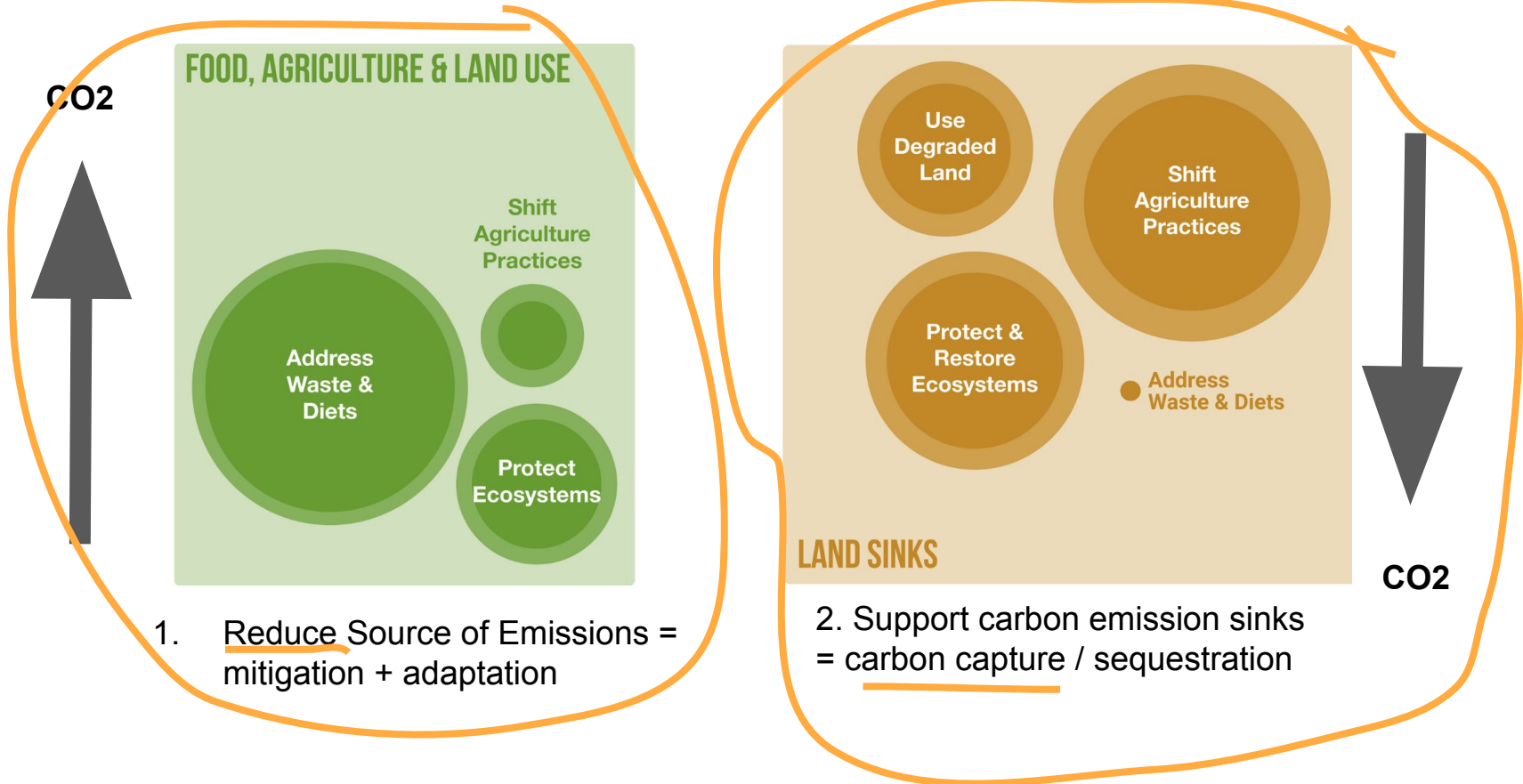


Global Sources of Emissions - Mitigation

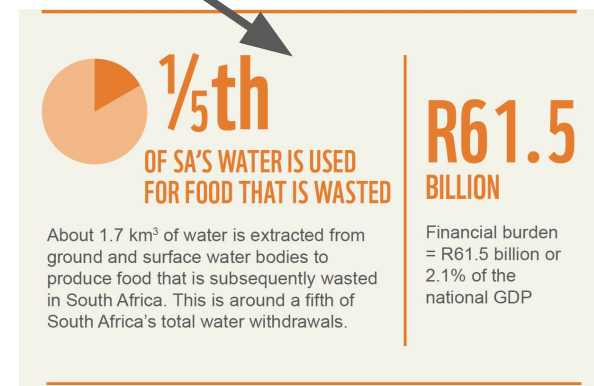
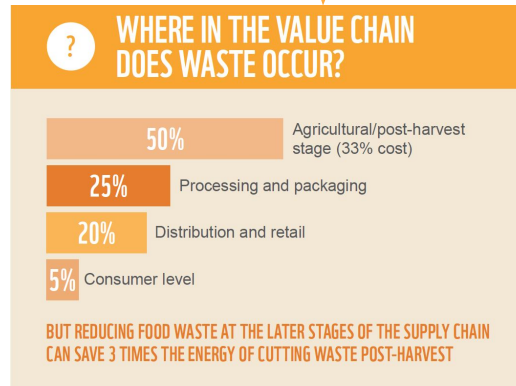
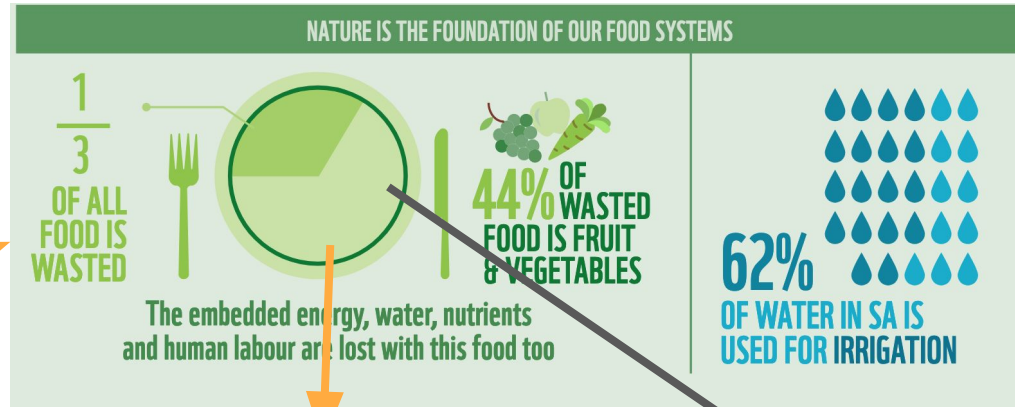
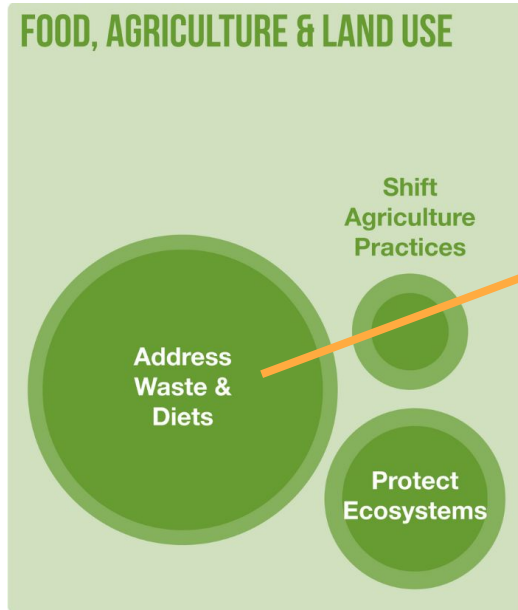
Carbon Capture/ Sequestration Mechanisms



Climate Solutions for Agriculture + Land Use



1. Reduce Source of Emissions

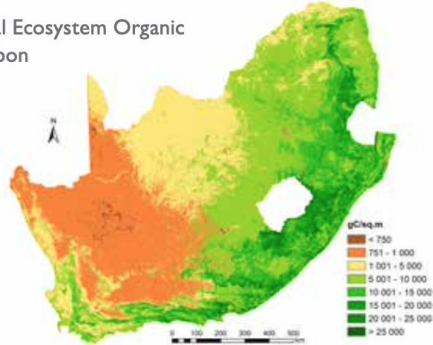


2. Support carbon emission sinks = carbon capture / sequestration

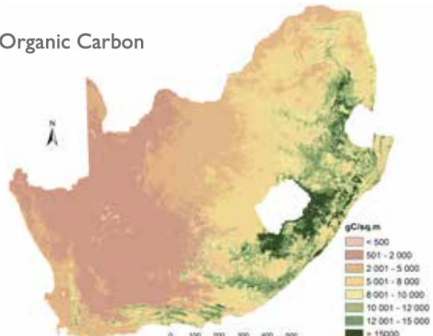
- Land use: agricultural land: 79.4%
- Arable land: 9.9%
- Permanent crops: 0.3%
- Permanent pasture: 69.2%
- forest: 7.6%
- other: 13%

Did you know?
 The grassland and savanna biomes contain approximately three quarters of the country's terrestrial carbon stock and account for over 90% of the Gross Primary Production (GPP).

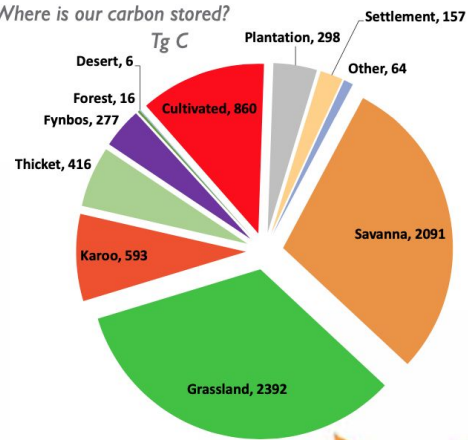
Total Ecosystem Organic Carbon



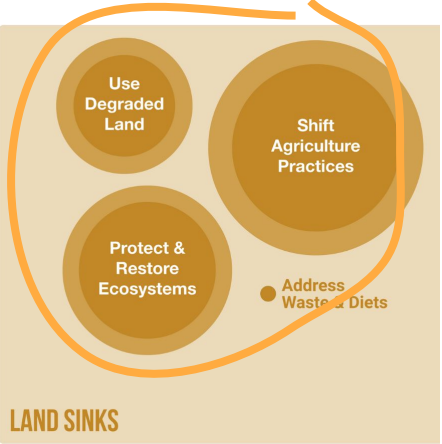
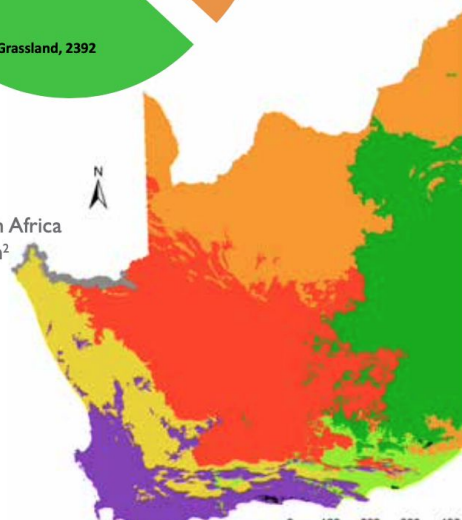
Soil Organic Carbon



Where is our carbon stored?



Total area of South Africa is 1.221 million km²

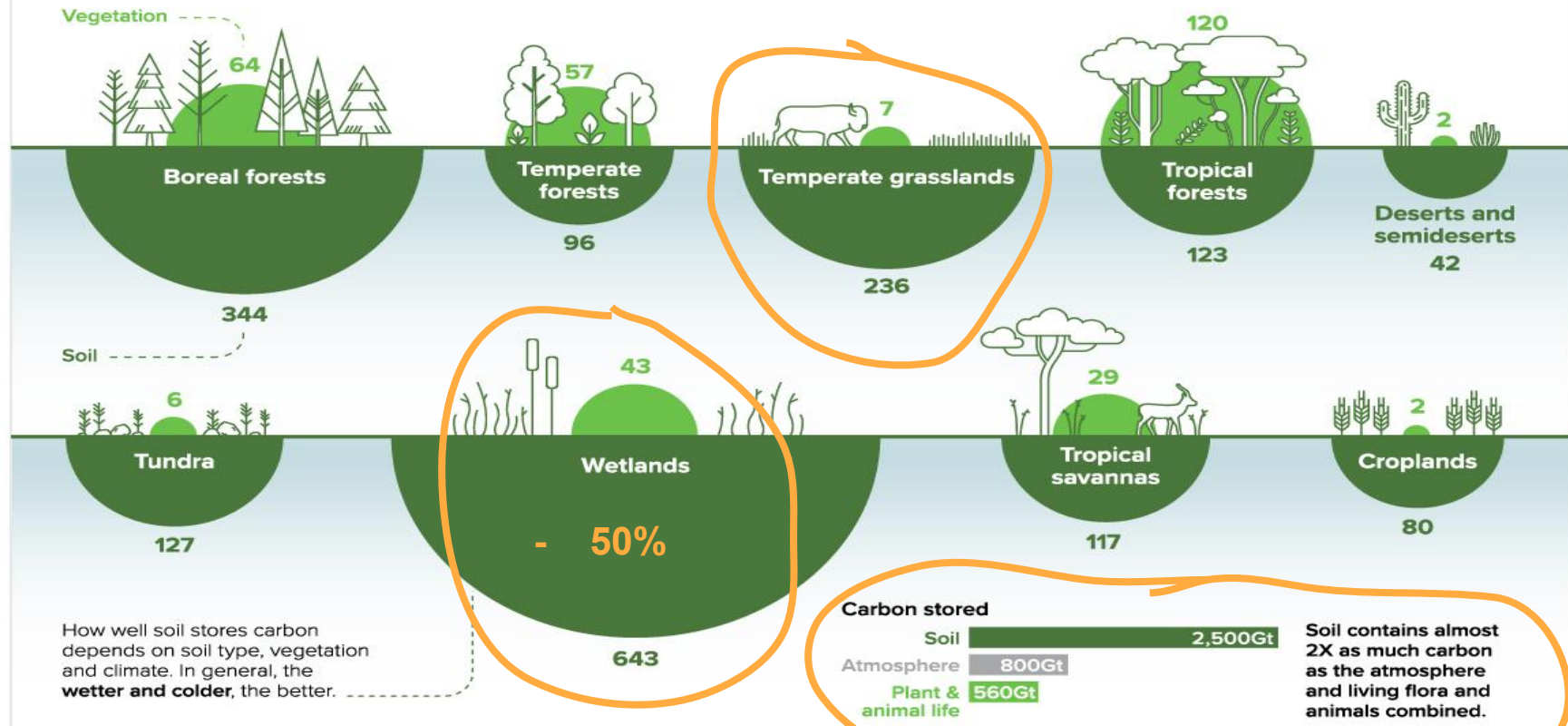


Carbon Storage

Tonnes of Carbon

The world's forests absorb around **15.6 gigatonnes** of CO₂ each year. That's around 3X the annual CO₂ emissions of the United States.

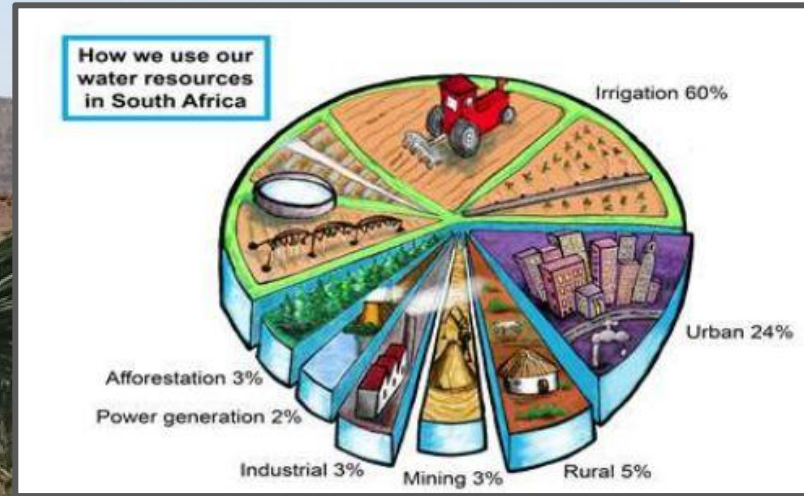
However, around **8.1 gigatonnes of CO₂** leaks back into the atmosphere due to deforestation, fires and other disturbances.



Average stored carbon in tonnes per hectare at a ground depth of one meter
Sources: IPCC; NASA

Activity	Spatial extent (ha)*	Restoration per unit area per yr (tC)	Reduction per yr (tCO2e)	Emissions over 20yr (tCO2e)*
Forest and woodlands				
Urban tree planting			26 950	417 725
Restoration coastal / scarp forests	8 570	1.8	56 562	876 711
Restoration broadleaf woodland	300 000	1.1	1 210 000	18 755 000
Commercial small-grower afforestation E. Cape & KZN	100 000	1.5	550 000	2 200 000
Replanting temporary unplanted plantations	30 000	1.5	165 000	660 000
REDD (Reducing deforestation / degradation)	Not known			
Sub-total: Forest and Woodland	438 570		1 981 562	22 491 711
Sub-tropical thicket				
Restoration of sub-tropical	500 000	1.2	2 200 000	34 100 000
REDD (Reducing deforestation / degradation)	Not known			
Sub-total: Sub-tropical thicket	500 000		2 200 000	34 100 000
Grassland				
Restoration - Erosion Mesic	270 000	0.7	693 000	10 741 500
Restoration - Erosion Dry	320 000	0.5	586 667	9 093 333
Restoration - Grasslands Mesic	600 000	0.5	1 100 000	17 050 000
Avoided degradation mesic	15 000	1.0	55 000	852 500
Restoration of agricultural land	80 000	0.7	205 333	3 182 667
Sub-total: Grassland	1 015 000		2 640 000	40 920 000
Cropland				
Application of biochar	700 000	0.3	641 667	9 945 833
Conservation Agriculture	3 453 557	0.3	3 798 913	75 978 254
Sub-total: Cropland	4 153 557		4 440 579	85 924 087
Feedlots and dairy				
Improved livestock efficiency			137 299	2 745 980
Improved feed quality			1 668	1 098 380
Sub-total: Feedlots and dairy			138 967	3 844 360
Bioenergy				
Biomass to energy			2 868 000	57 360 000
Anaerobic digestion			3 450 000	69 000 000
Sub-total: Bioenergy			6 318 000	126 360 000
TOTAL			17 719 108	313 640 158

Water Security In SA



Climate Change Impacts

- High likelihood that agricultural production in southern Africa will eventually collapse with low mitigation futures
- Livestock production, including meat and milk, will also become unviable.
- Freshwater availability, already critically limited in southern Africa, will be reduced in the future due to decreasing rainfall and increasing evaporation.

Regenerative Farming Practices and Soil Water Absorption

Conventional

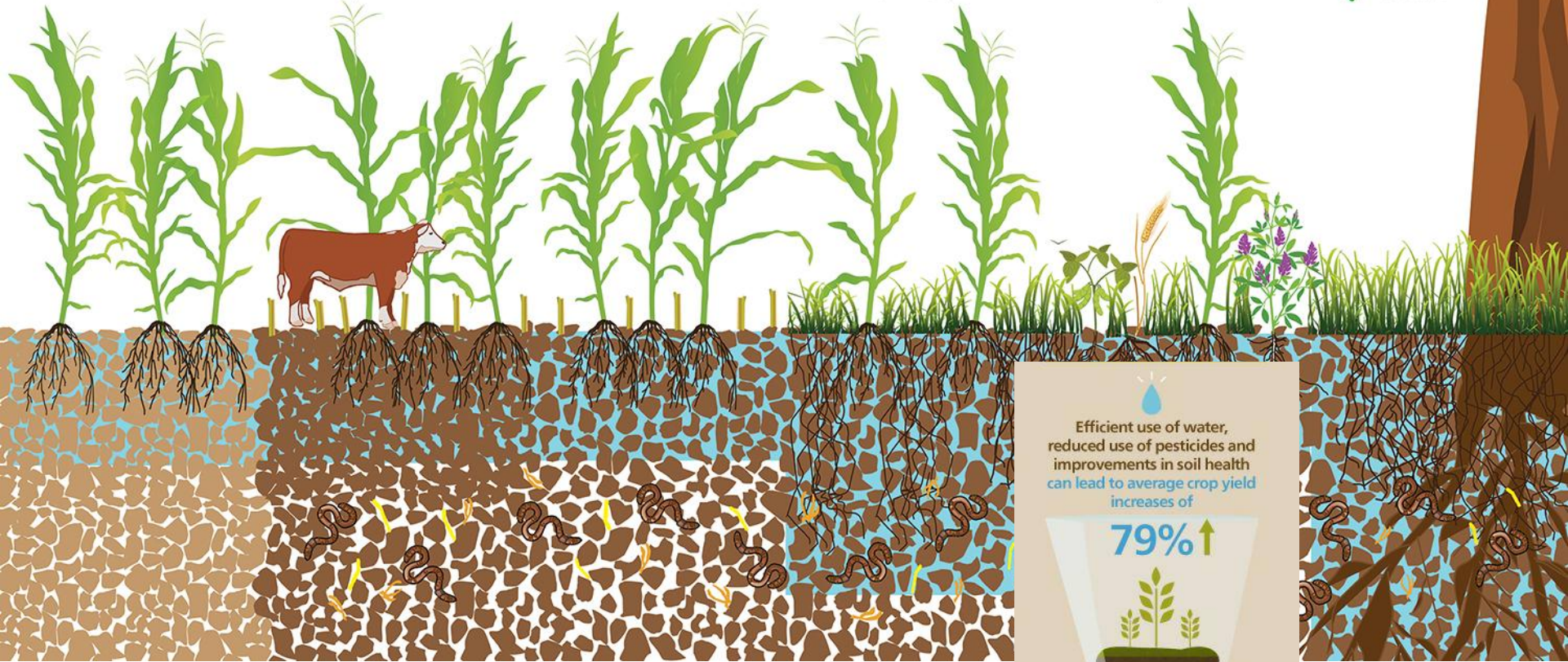
Crop and Livestock

No Till

Cover Crop

Crop Rotation

Perennial



Efficient use of water, reduced use of pesticides and improvements in soil health can lead to average crop yield increases of

79% ↑

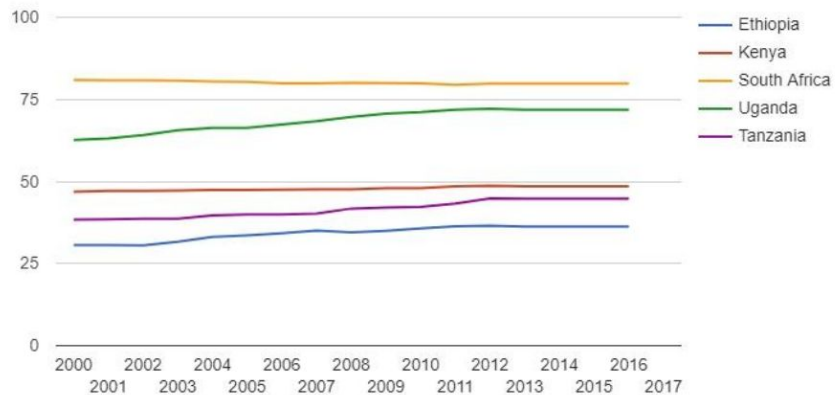
The graphic shows a funnel that narrows from top to bottom. At the top, a blue water drop icon is positioned above the text. The funnel's interior contains a small green plant with three leaves growing out of a pot filled with blue water. The number '79%' with an upward-pointing arrow is prominently displayed in the middle of the funnel.



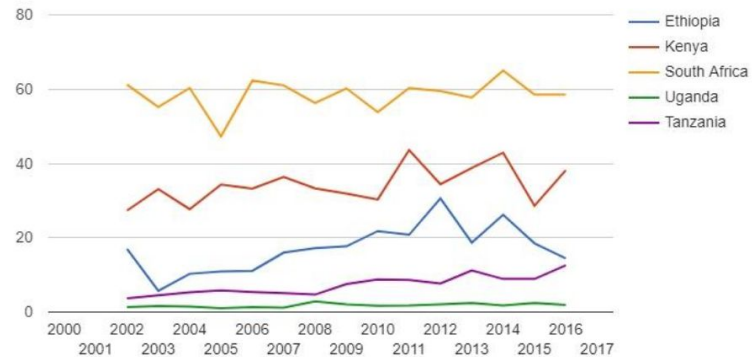
Washed away fields of sugarcane, severe soil erosion and damaged roads are among the devastation being dealt with on farms in flood-ravaged KwaZulu-Natal. Photos: Supplied/Mzansi



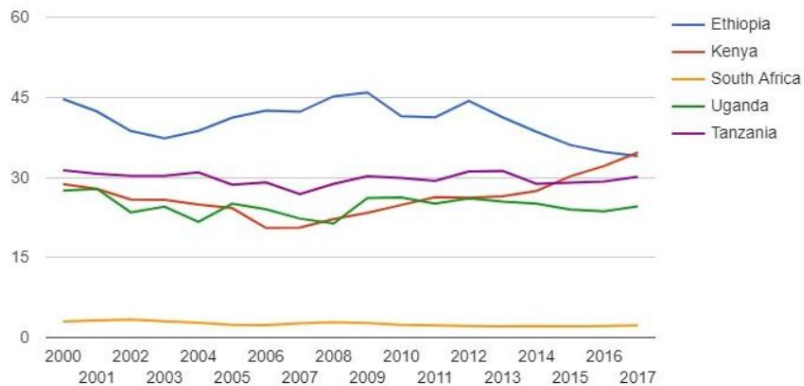
Percent agricultural land



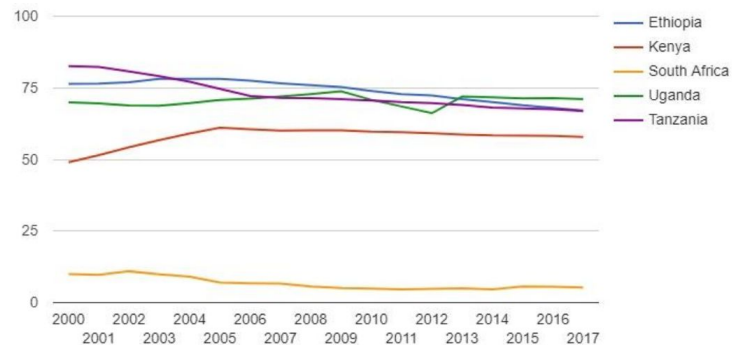
Fertilizer use, kg per hectare of arable land



Value added in the agricultural sector as percent of GDP



Employment in agriculture, % of total employment



Conclusion

- **Strike a balance between increasing agriculture & addressing emissions of AFOLU**
- **Policies in draft form in DAFF - the Conservation Agriculture Policy, the Agroecological Strategy, the Organic Policy**
- **The Conservation of Agricultural Resources Act (1983) - not integrated or referenced by DAFF - unlocks key to sinks + emissions reduction**
- **Address gaps in SA National Terrestrial Carbon Sinks Report**
- **Address gaps in SA's policy regarding AFOLU sector**
- **Lack of inclusion of AFOLU sector to Climate Change Policy**
 - **Emissions**
 - **Mitigation**



**Shifting Agricultural Practices
focusing on Supporting Land
Sinks for Carbon Emission
Capture holds the KEY.**

Food security

Water security

Jobs

Economy

Public Health

**Environmental
Pollution**

Biodiversity

Climate Change

**Greenhouse Gas
Emissions**