Carbon Tax and Agriculture

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The South African Carbon Tax Act (No. 15 of 2019) came into effect on 1st June 2019.

The first phase of the tax will run until December 2022, with the second phase running from 2023 – 2030. Agriculture is not included in the first phase, and it is uncertain as to how – and whether – it will be included in the second phase.

Electricity and fossil fuels (such as diesel) are included in the first phase of the Act. It is probable that the additional tax burden that energy producers have to carry will be passed on in the value chain, resulting in higher prices for these commodities. For liquid fuels the effect of this tax is already being felt by consumers, with the June fuel price increase of **9c/litre** on petrol and **10c/litre** on diesel.

Electricity prices are not expected to see an immediate increase, as Eskom has requested exemption from the tax until 2022 (the utility pays a levy of 3.5c/kWh on electricity generated from non-renewables). After 2022, the removal of this renewables rebate is expected to have a significant impact on electricity price increases from 2023 onwards.

An important part of managing this tax is understanding where emissions are coming from and the relative carbon intensity of different agricultural inputs. The Confronting Climate Change (CCC) Initiative uses industry data from the South African fruit and wine sectors to determine industry-specific CO_2e benchmarks. These benchmarks provide a meaningful platform for these industries to improve their understanding of the use of fossil fuel-based resources and to reduce emissions – and carbon-based costs – over time.

HOW MUCH WILL THE CARBON TAX COST FARMERS?

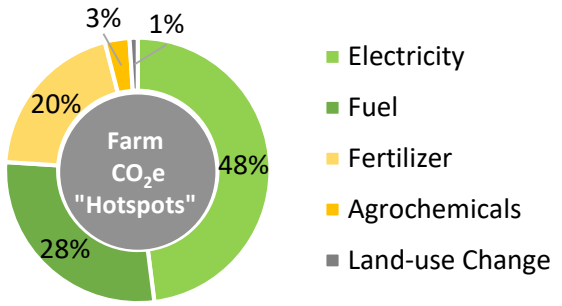
The basic tax rate is set to be R120/tonne CO_2e, with a basic allowance of R48/ tonne CO_2e. Other allowances include:

- Trade exposure allowance* = R36
- Performance allowance* (i.e. industry benchmarks) = R30
- Carbon Budget allowance = R24
- Carbon offsets* = R12
- Minimum carbon tax rate = R12

Allowable tax breaks will reduce the effective carbon tax rate to between **R6 and R48** per tonne of CO_2.

*Regulations for these allowances are still outstanding.

WHERE DO FARM EMISSIONS COME FROM?



CO_2e emissions vary by farm, region and commodity. On average, farms participating in the CCC benchmark have a CO_2 footprint = **6.82 tonnes CO_2e/ha.**

WHAT WILL FARMERS BE PAYING FOR?

From 2022 onwards farmers could be paying both **direct** and **indirect** carbon taxes.

Direct emission sources listed in the Act relevant to agriculture include:

- N_2O emissions
- Urea application
- Liming
- Biomass burning
- Land use change
- Diesel generator with combined capacity of 10 MW or greater.

Indirect emission sources listed in the Act relevant to agriculture include:

- Electricity
- Diesel
- Petrol
- N_2O emissions

Areas likely to be impacted are electricity, fuel and fertilizer.

WHAT ARE THE PROJECTED COSTS?

	Electricity	Diesel	Nitrogen Fertilizer
Consumption per bearing ha[a]	3353 kWh	320 L	101 kg
Approximate tax rate	Indirect: 7.5c/kWh[b]	Indirect: 10c/L	Direct: R48/tonne CO_2[c]
Projected Cost per bearing ha	**R252**	**R32**	**R59**

Carbon costs could be in the region of **R343 per bearing hectare.**

[a] Average consumption is based on graded datasets contained in the CCC database and reflect a combined average of South African fruit and wine data.
[b] Estimated indirect carbon tax levy. No official information on the electricity tariff was available at the time of writing.
[c] Expected maximum effective carbon tax rate. Nitrogen carbon costs were determined using an emission factor of 12.044 kg CO_2/kg N fertilizer.

UNDERSTANDING CARBON FOOTPRINT CALCULATIONS

At the most basic level, a farm's carbon footprint is calculated based on different farm level inputs and the carbon intensity of these inputs.

The carbon intensity is described by emission factors. As far as possible these emission factors should be country-specific. The emission factors used for South Africa by the CCC initiative are shown in the table on the right.

Input	Carbon Intensity*
Electricity, Grid	**0.96** kg CO_2e/kWh
Diesel	**3.24** kg CO_2e/L
Petrol	**2.78** kg CO_2e/L
Fertilizer, pure N	**12.04** kg CO_2e/kg
Fertilizer, pure P	**4.82** kg CO_2e/kg
Fertilizer, pure K	**1.35** kg CO_2e/kg

CO_2 emissions = ∑Input x Emission Factor

Example:

A farm reports the following inputs

- **3353** kWh/bearing ha of grid electricity
- **320** L of diesel/bearing hectare
- **101** kg N fertilizer/bearing hectare

Calculations:

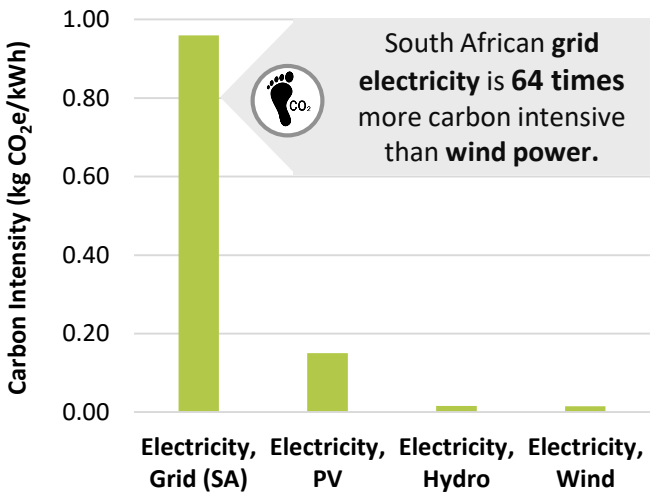
CO_2 emissions = ∑Input x Emission Factor
CO_2 $emissions_{electricity}$ = 3353 x 0.96 = 3219 kg CO_2/bearing ha
CO_2 $emissions_{diesel}$ = 320 x 3.24 = 1037 kg CO_2/bearing ha
CO_2 $emissions_{N\ fertilizer}$ = 12.04 x 101 = 1216 kg CO_2/bearing ha

Total CO2 emissions = 3219 + 1037 + 1216 = 5471 kg CO2/bearing ha

HOW CAN I REDUCE MY CARBON EMISSIONS?

Improving input efficiencies and using low carbon alternatives are effective ways to reduce your carbon emissions and carbon costs.

For example, emissions from grid electricity contribute ~50% to a farm's carbon footprint. From 2022, the electricity price is expected to increase with the inclusion of a carbon tax levy. Improvements in electricity efficiency and investment in renewable energy reduces your dependence on grid electricity, lowering your farm's carbon footprint and electricity costs.



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