



Climate Action Plan 2021 Progress Report November 2022

With several sources of data including Department of Agriculture, Food and the Marine Fertiliser Sales Q4 2022, CSO Crops and Livestock Provisional Data June 2022, Teagasc NFS Sustainability Report 2021 and CSO Fertiliser Sales being reported in the past few weeks it is worth looking at the 2030 targets set out in the 2021 Climate Action Plan to assess progress to date for 2022.

1. Chemical Nitrogen Use.

As part of the Climate Action Plan 2021 the target is to reduce chemical N to less than 350,000 tonnes by 2025 and to less than 325,000 tonnes by 2030. The following table shows the use of chemical nitrogen by year since 2018. 2018 is the base year for greenhouse gas emissions.

Table 1: Chemical nitrogen use for the period 2018 to 2022

| Year | Chemical Nitrogen Nutrient (tonnes) | Change on Previous Year |
|--------------------|-------------------------------------|-------------------------|
| 2018 | 408,495 | +11% |
| 2019 | 367,364 | -10% |
| 2020 | 379,519 | +3% |
| 2021 | 399,164 | +5% |
| 2022 | 343,193 | -14% |
| 2025 Target | <350,000 | |
| 2030 Target | <325,000 | |

Department of Agriculture, Food and the Marine Fertiliser Sales Q4 2022.

The chemical nitrogen fertiliser use for 2022 is ahead of the 2025 target and the 14% reduction in usage in 2022 will feed through to lower greenhouse gas emission for 2022 compared to 2021. Overall chemical nitrogen use was 16% lower in 2022 than the base year of 2018. *If this was sustained going forward it is 80% of the way to achieving our 2030 target for reduced chemical N usage.*

Table 2: Chemical nitrogen source used in 2022

| Year | Chemical Nitrogen Nutrient (tonnes) | % of Total Chemical N |
|--|-------------------------------------|-----------------------|
| 2022 Chemical N as Straight Nitrogen Fertilisers | 195,683 | 57% |
| 2022 Chemical N as Compound Fertilisers | 147,510 | 43% |
| 2022 Total Chemical N | 343,193 | 100% |

Department of Agriculture, Food and the Marine Fertiliser Sales Q4 2022.

The split in chemical nitrogen use for 2022 was 57% of chemical nitrogen was used as straight nitrogen and 43% of chemical nitrogen was used in compound fertilisers.

Another target in the Climate Action Plan 2021 is for 65% of CAN based fertiliser to be replaced with Protected Urea (or other protected products) by 2030. This equates to about 75% of all Straight Nitrogen being spread as Protected Urea in 2030. Table 3 shows the use of CAN, Urea and Protected Urea in 2022.

Table 3: Chemical nitrogen source in straight nitrogen fertilisers 2022

| Year | Chemical Nitrogen Nutrient (tonnes) | % of Straight Chemical N |
|---|-------------------------------------|--------------------------|
| 2022 Straight Urea Chemical N | 55,158 | 28.2% |
| 2022 Protected Urea Chemical N | 30,148 | 15.4% |
| 2022 CAN Chemical N | 110,377 | 56.4% |
| 2022 Chemical N as Straight Nitrogen Fertilisers | 195,683 | 100% |
| 2030 Target for Protected Urea Use | 136,500 | 75% |

Department of Agriculture, Food and the Marine Fertiliser Sales Q4 2022.

Protected Urea use increased by 59% in 2022, while ordinary Urea use increased by 28% in 2022. CAN based straight nitrogen use reduced by 22% in 2022. Protecting all the Urea being used by farmers would make a huge difference to meeting our national Ammonia targets into the future. *Urea and Protected Urea now make up a combined 43.6% share of the straight nitrogen market and if all this was protected farmers would be almost 60% of the way towards the 2030 Protected Urea target.*

Message for farmers and advisers

Maintain the gains made in reduced use of chemical nitrogen in 2022 and continue the positive momentum in spreading more of the straight nitrogen used as Protected Urea in 2023.

Table 4: Chemical phosphorus (P) use for the period 2018 to 2022

| Year | Chemical Nitrogen Nutrient (tonnes) | Change on Previous Year |
|-------------|--|--------------------------------|
| 2018 | 46,387 | +11% |
| 2019 | 42,672 | -8% |
| 2020 | 44,259 | +4% |
| 2021 | 46,068 | +4% |
| 2022 | 34,240 | -26% |

Department of Agriculture, Food and the Marine Fertiliser Sales Q4 2022.

Table 4 shows chemical phosphorus use for 2018 to 2022. In order to reduce the use of chemical nitrogen in the longer term farmers need to increase their P and K levels. The usage of chemical phosphorus (P) has fallen by 26% in 2022 which will mean farmers drawing on their soil reserves in 2022.

Table 5: Chemical potassium (K) use for the period 2018 to 2022

| Year | Chemical Nitrogen Nutrient (tonnes) | Change on Previous Year |
|-------------|--|--------------------------------|
| 2018 | 120,267 | +11% |
| 2019 | 114,288 | -5% |
| 2020 | 118,016 | +3% |
| 2021 | 122,922 | +4% |
| 2022 | 93,614 | -24% |

Department of Agriculture, Food and the Marine Fertiliser Sales Q4 2022.

Table 5 shows chemical potassium use for 2018 to 2022. In order to reduce the use of chemical nitrogen in the longer term farmers need to increase their P and K levels. The usage of chemical phosphorus (K) has fallen by 24% in 2022 which will mean farmers drawing on their soil reserves in 2022.

Message for farmers and advisers

Where farmers have a phosphorus (P) allowance in 2023 then 18:6:12 should be the compound fertiliser of choice, as it will address P and K fertiliser needs. For any other chemical nitrogen use then farmers should use Protected Urea.

2. Lime Usage

Lime spreading and clover use are two of the key technologies to reduce chemical fertiliser use. Back in the 1970's and 1980's Irish farmers were spreading between 1,500,000 and 2,000,000 tonnes of lime per annum. Lime application rates fell as low as 600,000 tonnes per annum in the 2000's which was well below the rates needed. If we are to get to optimal lime rates again Irish farmers need to be spreading in the region of 1,500,000 and 2,000,000 tonnes of lime per annum.

Table 6: Lime use for the period 2018 to 2021

| Year | Chemical Nitrogen Nutrient (tonnes) | Change on Previous Year |
|--------------------|-------------------------------------|-------------------------|
| 2018 | 1,028,738 | +40% |
| 2019 | 762,867 | -26% |
| 2020 | 887,320 | +16% |
| 2021 | 1,333,100 | +50% |
| 2030 Target | 1,750,000 | |

CSO Lime Sales 2000 to 2021.

The rate of lime spreading which occurred in 2021 was the highest rate of lime spreading since the mid 1980's.

Message for farmers and advisers

To maintain the rate of lime required to match the levels of lime spread in the 1970's and 1980's farmers need to be spreading lime at a rate of a 20 tonne load of lime for every 60 livestock units per annum. At current fertiliser prices lime is the cheapest form of fertiliser as it can unlock naturally occurring nitrogen and phosphorus from the soil.

3. Low Emission Slurry Spreading

Table 7: % of all Slurry spread by Low Emission Slurry Spreading 2018 to 2021

| Year | Change on Previous Year |
|--------------------|-------------------------|
| 2018 | 4% |
| 2019 | 22% |
| 2020 | 38% |
| 2021 | 48% |
| 2030 Target | 90% |

Teagasc National Farm Survey Sustainability Report 2021.

Farmers have really taken to the LESS technology increasing from 4% of slurry spread in 2018 by LESS to 48% in 2021. This is over half way to achieving the 2030 target.

4. National Herd Continues to Stabilise

The CSO have just published their Crops and Livestock Provisional data for June 2022. The data shows a continued stabilisation of the national herd (Table 8).

Table 8: Breakdown of Stock Numbers by Stock Category for June 2022 with % Change for each Stock Category from June 2021 to June 2022 and from June 2018 (Base year for GHG emissions) to June 2022.

| Stock Type | Stock Numbers June 2022 | % Change June 2021 to June 2022 | % Change June 2018 to June 2022 |
|------------------------------|----------------------------|---------------------------------------|---------------------------------------|
| Dairy Cows | 1,627,300 | +1.40% | +9.90% |
| Suckler Cows | 913,200 | -2.90% | -12.90% |
| Total Cows | 2,540,500 | -0.20% | +0.50% |
| Cattle over 2 years | 783,500 | +1.90% | -6.30% |
| Cattle 1-2 years | 1,937,700 | +2.00% | +1.70% |
| Cattle under 1 year | 2,134,500 | -0.50% | +2.70% |
| Total Cattle Numbers | 7,396,200 | +0.50% | +0.60% |
| Total Livestock Units | 5,320,740 | +0.60% | +0.00% |

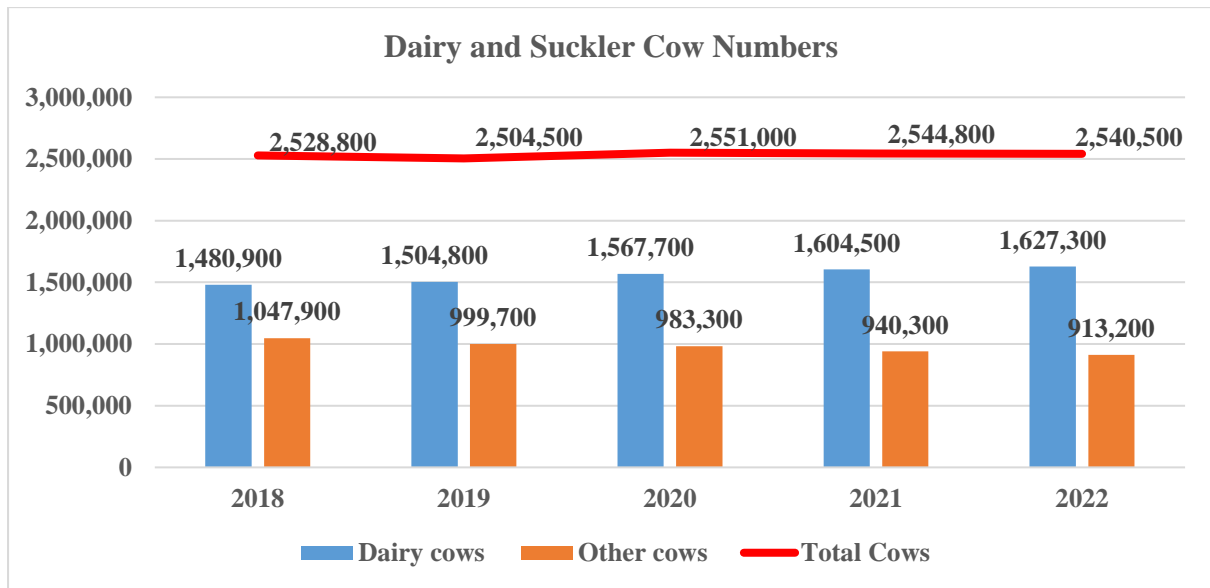
CSO Crops and Livestock Provisional Data June 2022.

The total number of livestock units in June 2022 is 0.60% higher than June 2021, but at the very same level as June 2018. While the stock numbers have remained stable there has been an increase in the number of Dairy Cows (+9.9%) and a decrease in the number of Suckler Cows (-12.9%) between June 2018 and June 2022.

In June 2018 the year on which agricultural greenhouse gas emissions are based, there was a total of 2,528,800 cows in the national herd between dairy and suckler cows. In June 2022 the total number of cows stands at 2,540,500 which is an increase of 11,700 cows (+0.5%) in the four years between 2018 and 2022.

The breakdown between dairy and suckler cows is shown in chart 1. Between 2018 and 2022 dairy cows have increased by 146,400 cows and suckler cows decreased by 134,700.

Chart 1: Breakdown of Dairy and Suckler Cow Numbers

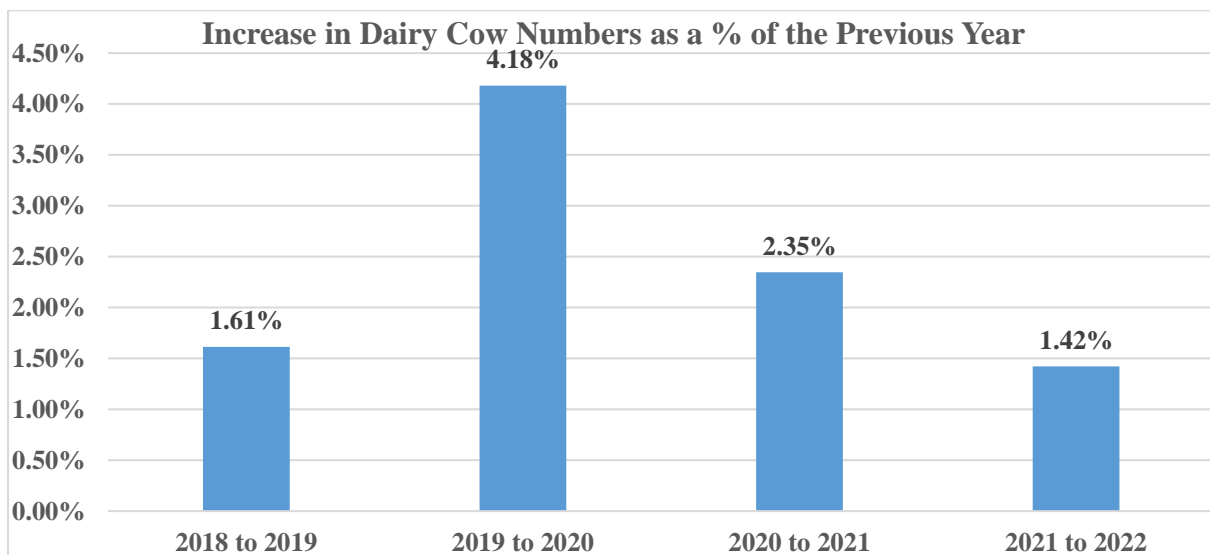


CSO Crops and Livestock Provisional Data June 2022.

Rate of increase in dairy cow numbers is slowing

While dairy cow numbers have increased 1.42% in 2022 on the 2021 figures this is at a much reduced rate from the 2.35% increase in 2021 and the 4.18% increase in 2020 (chart 2).

Chart 2: Rate of Change in Dairy Cow Numbers by year 2018 to 2022



CSO Crops and Livestock Provisional Data June 2022.

The increase in culling marginal dairy cows has presented itself in the reduced increase in dairy cow numbers for June 2022.

Table 9: Rate on increase in Dairy Cow numbers from the previous year's figures.

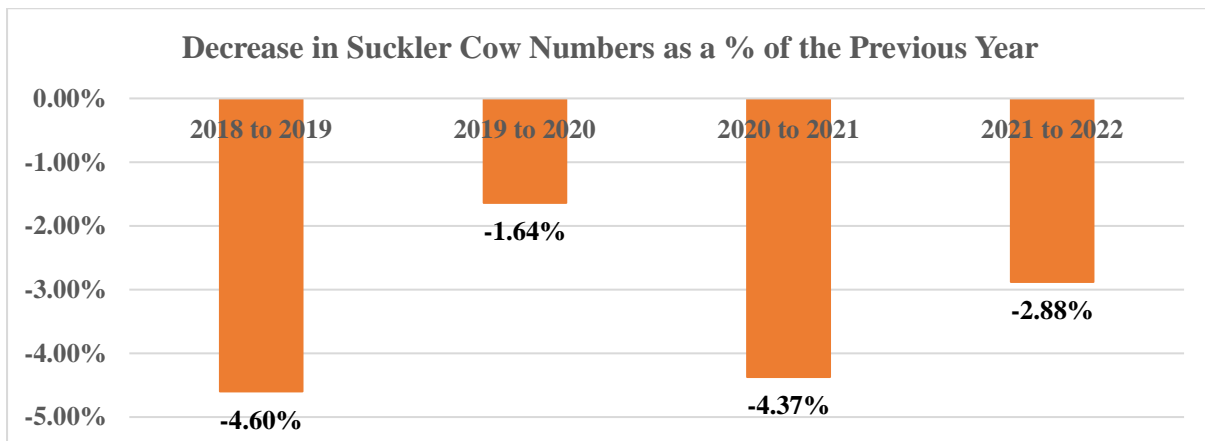
| Year | Rate of Increase from Previous Year |
|--------------|-------------------------------------|
| 2018 to 2019 | + 1.61% |
| 2019 to 2020 | + 4.18% |
| 2020 to 2021 | + 2.35% |
| 2021 to 2022 | + 1.42% |

CSO Crops and Livestock Provisional Data June 2022.

Rate of decrease in suckler cow numbers is slowing

While suckler cow numbers have decreased 2.88% in 2022 on the 2021 figures this is at a much reduced rate from the 4.37% decrease in 2021 (chart 3).

Chart 3: Rate of Change in Suckler Cow Numbers by year 2018 to 2022



CSO Crops and Livestock Provisional Data June 2022.

Table 10: Rate on decrease in Suckler Cow numbers from the previous year's figures.

| Year | Rate of Increase from Previous Year |
|--------------|-------------------------------------|
| 2018 to 2019 | - 4.60% |
| 2019 to 2020 | -1.64% |
| 2020 to 2021 | -4.37% |
| 2021 to 2022 | -2.88% |

CSO Crops and Livestock Provisional Data June 2022.