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Provisional GHG emissions for 2021

Brian Ó Gallachóir

Presentation to the 10th MaREI Climate & Energy Research Seminar
ESRI, May 30th 2022

HOST INSTITUTION

UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

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Key Takeaway Points

1. We (now) have strong political support for **climate ambition**
2. Carbon Budgets provide a **clear legislative framework**
3. There is an urgent need to **accelerate the energy transition**
4. **Short term** – carbon budget 2021-2025 = 295 Mt CO_{2eq}
5. Ireland is **not on track** based on provisional 2021 data
6. **Greater** emissions **reductions** required in 2022-2024.
7. Post-covid recovery pointing to **higher emissions in 2022**
8. **Disconnect** between ambition and action

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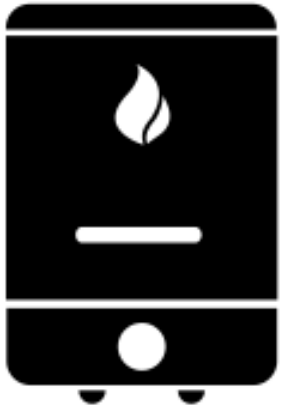
What have we achieved? Ireland's GHG Emissions 2005-2020

46%

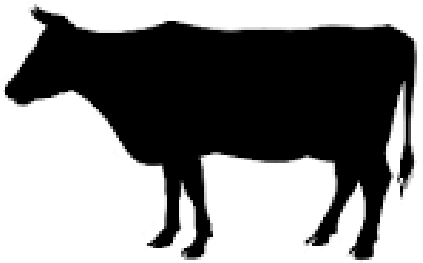
23%

Total GHG

18%



13%



5%

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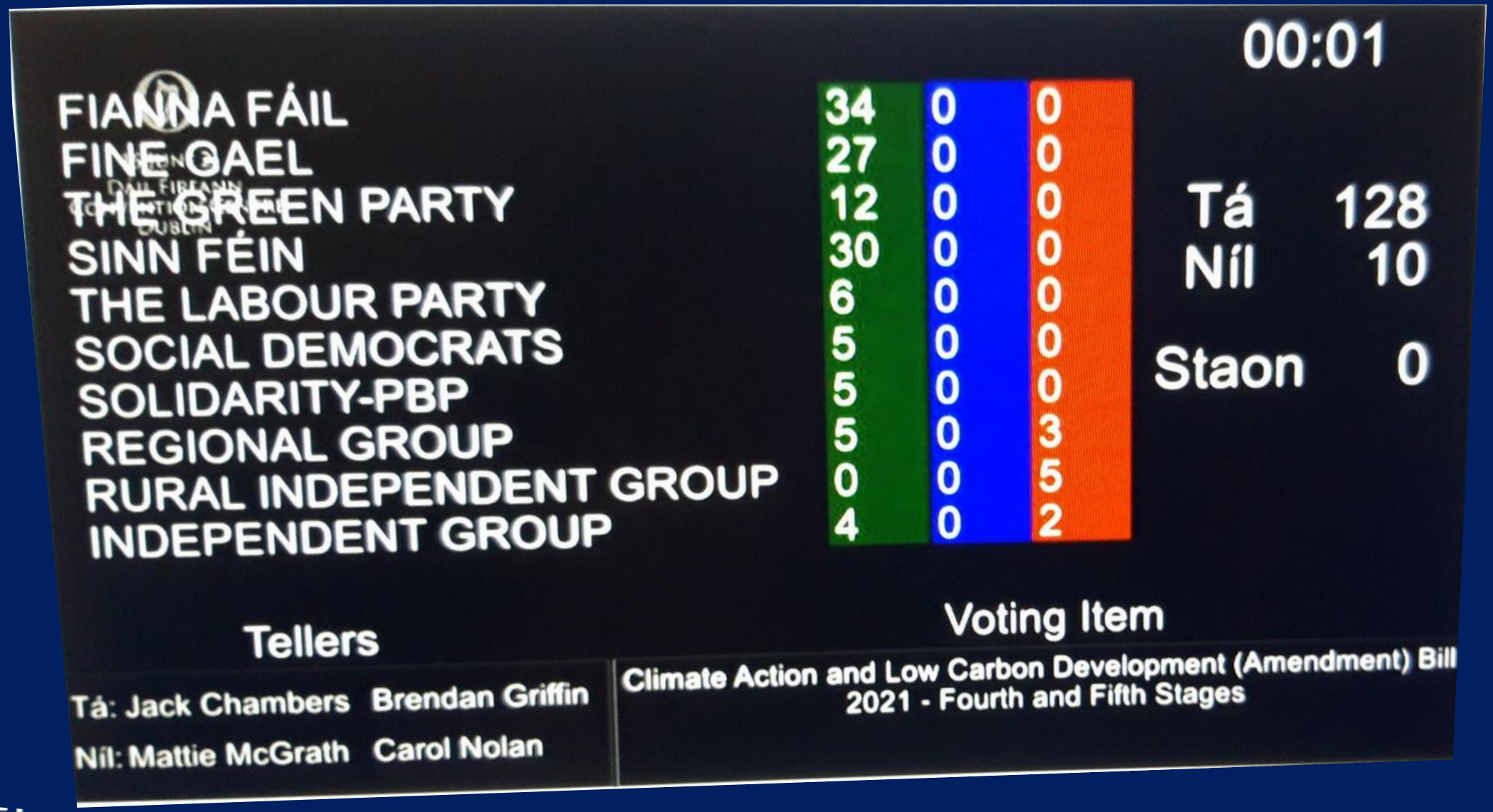
Brian Ó Gallachóir: [How has Ireland reduced greenhouse gas emissions by 18% since 2005?]

Increasing Climate Ambition … overwhelming political support



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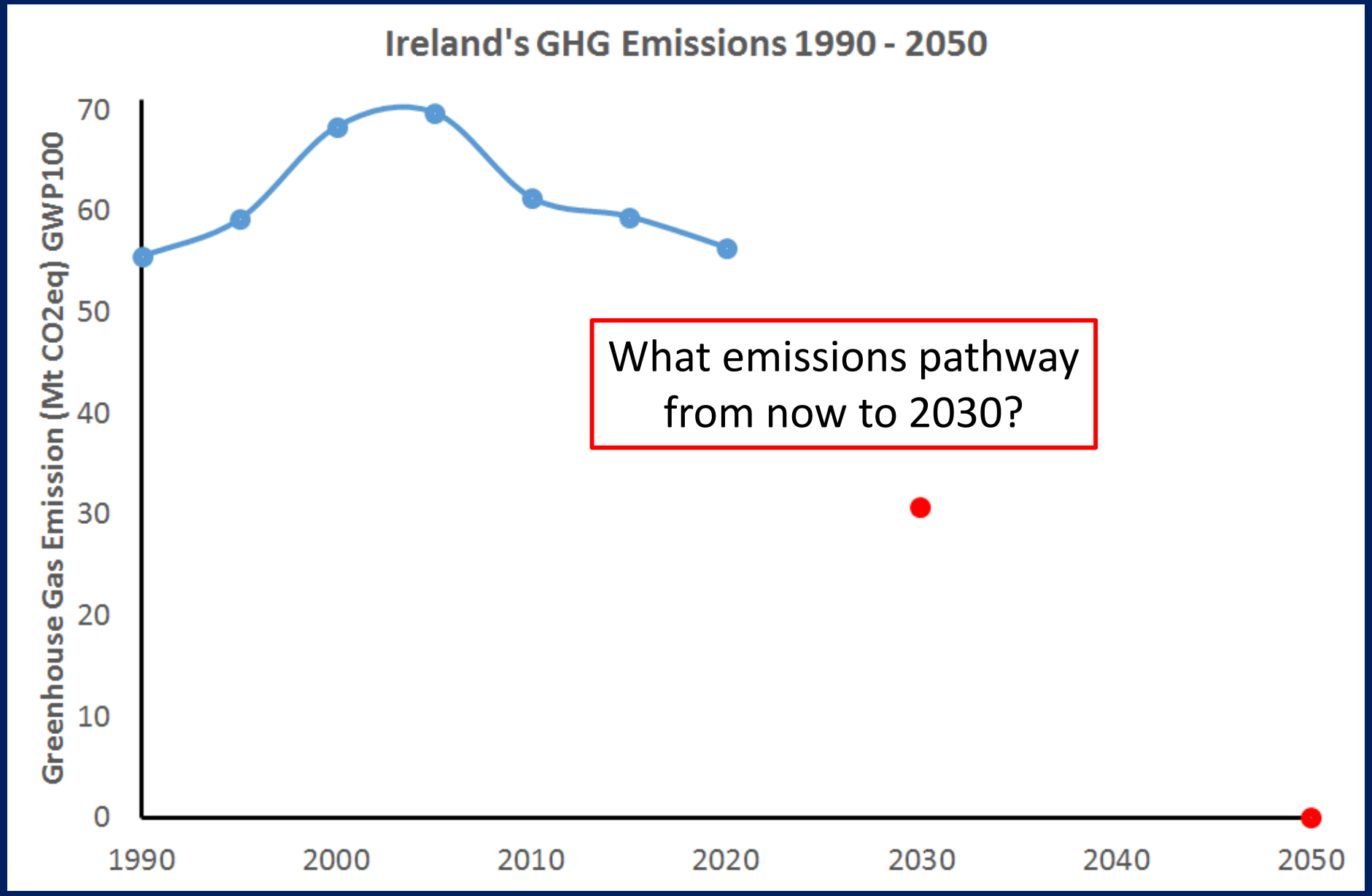
Climate Act 2021 – *Climate neutral by 2050* and 51% reduction by 2030



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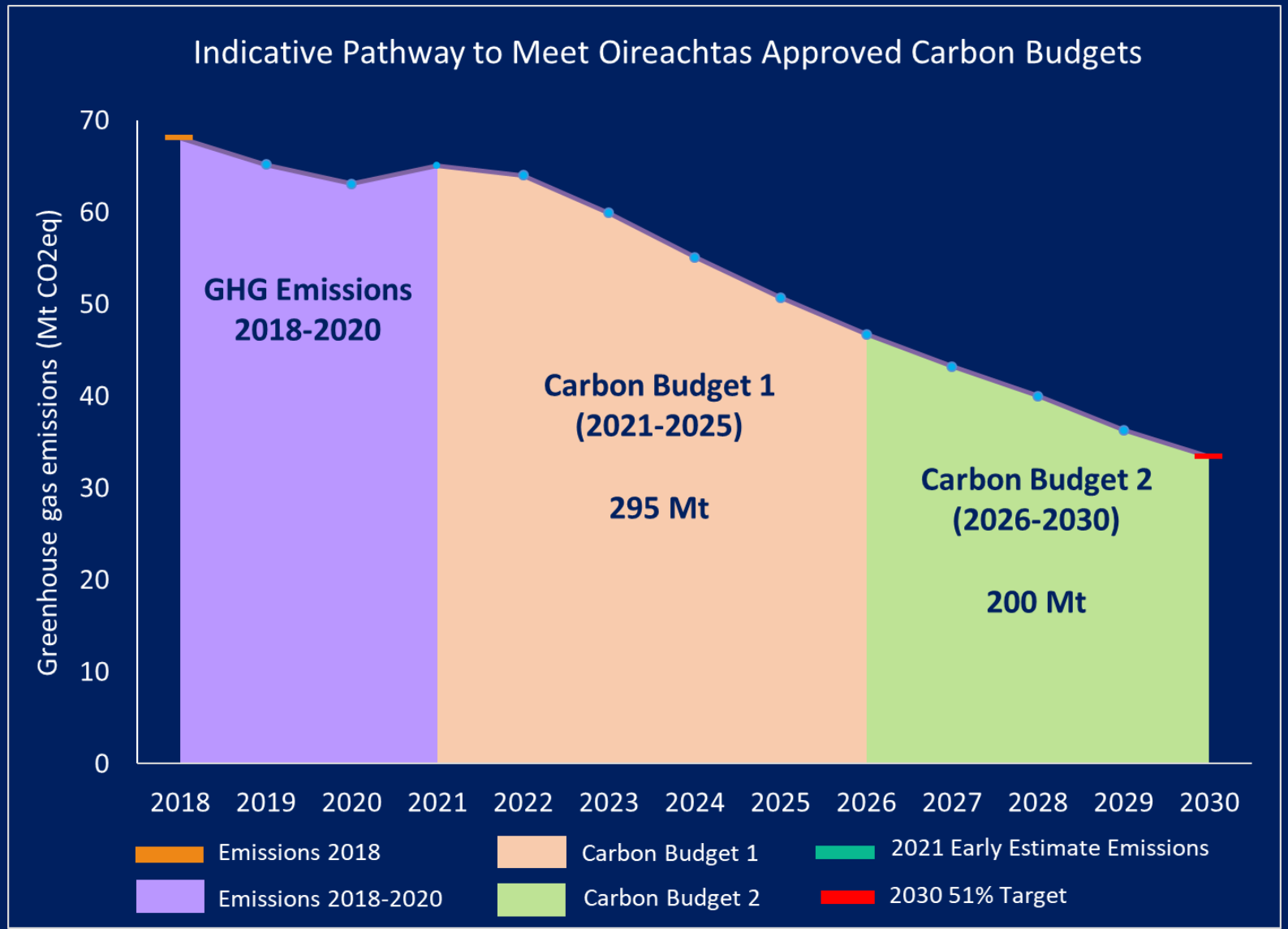
Carbon Budgets Provide Clear Framework

Ireland's climate ambition is now (51% reduction by 2030) is second in the world only to Denmark. The Oireachtas recently approved 5-yearly carbon budgets to assist us in getting there.



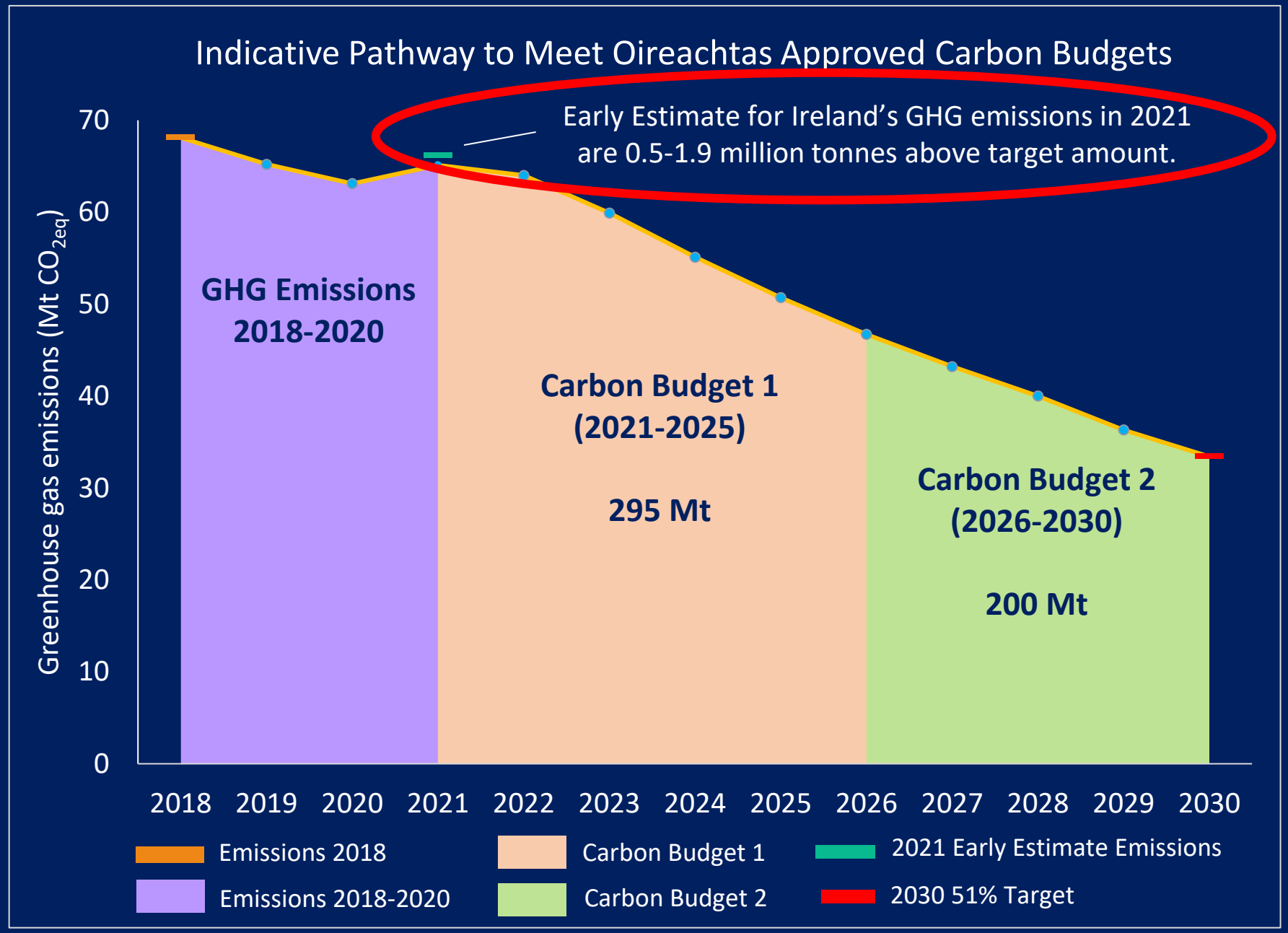
Comment

This is an **unprecedented level** of decarbonisation across the full economy and achievability will be challenging.

Carbon budgets (left) will be influential in shaping the energy and agriculture landscape in Ireland and will pivot policy to 'emissions reduction targets'

Sectoral emissions ceilings will be determined - lower emissions reduction potential in agriculture, will demand deeper decarbonisation of transport, heat and electricity

But we're not on track …



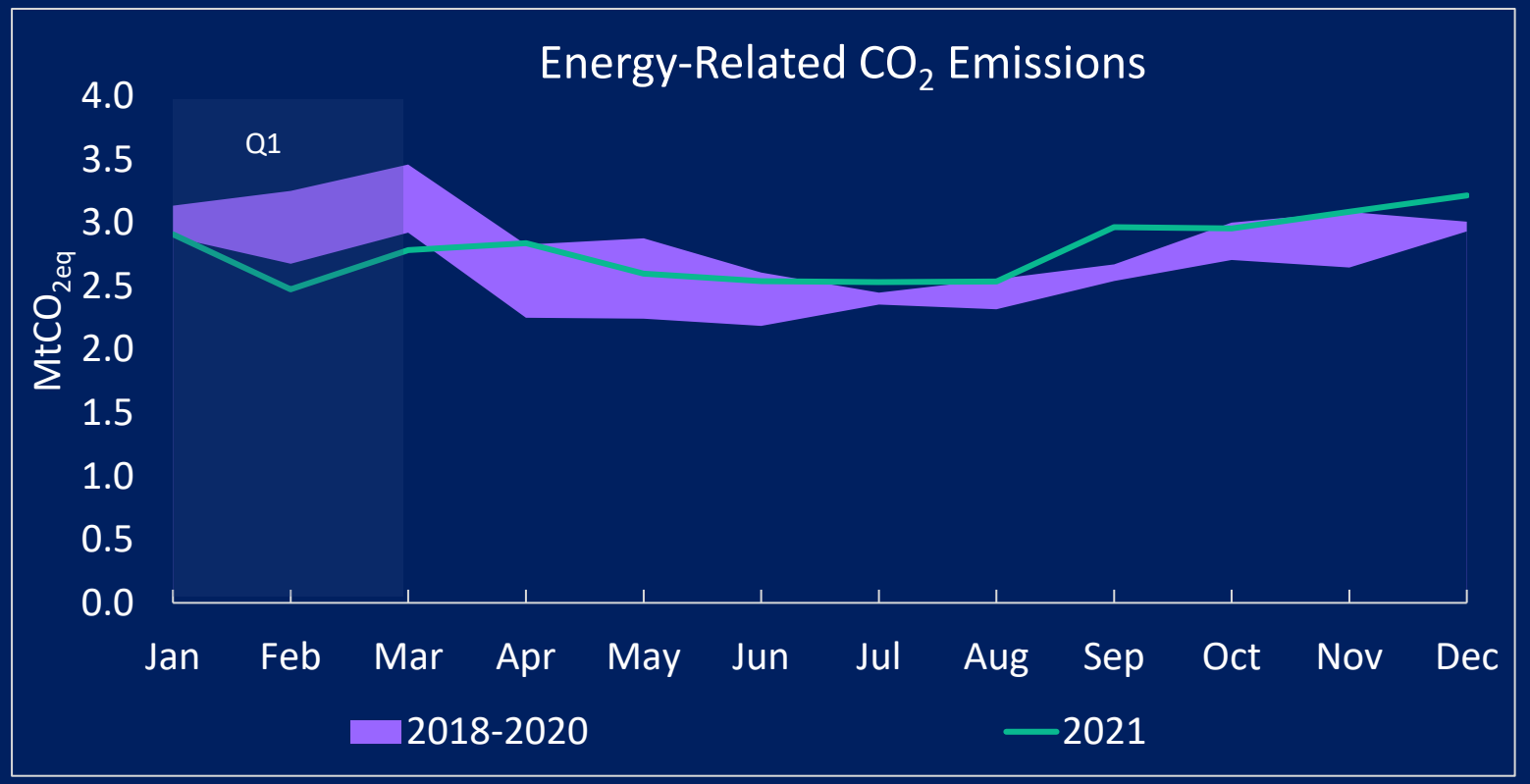
Comments

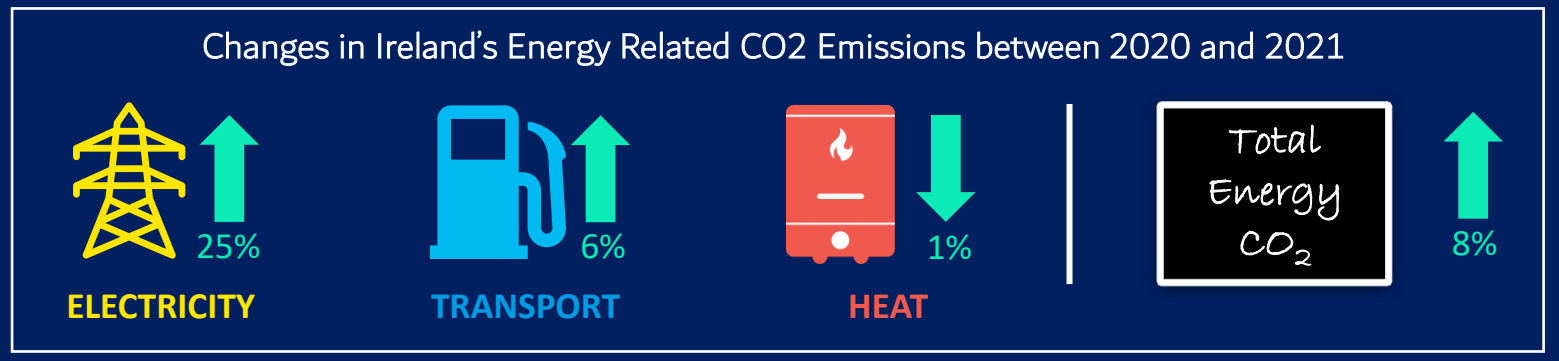
Worth noting that emissions in early 2021 were also impacted by the Covid-19 pandemic, indicating the country is further off track to meet the first carbon budget than these numbers suggest.

In the context of carbon budgets, early action matters and early reductions add up to bigger savings later. Conversely, delayed action also matters and the early failings we are seeing here add up to more stringent emissions cuts over the remaining 2022-2025 period.

https://www.irishtimes.com/news/science/climate-action-in-ireland-is-not-following-climate-ambition-1.4852656

Taking a closer look at total energy related emissions …



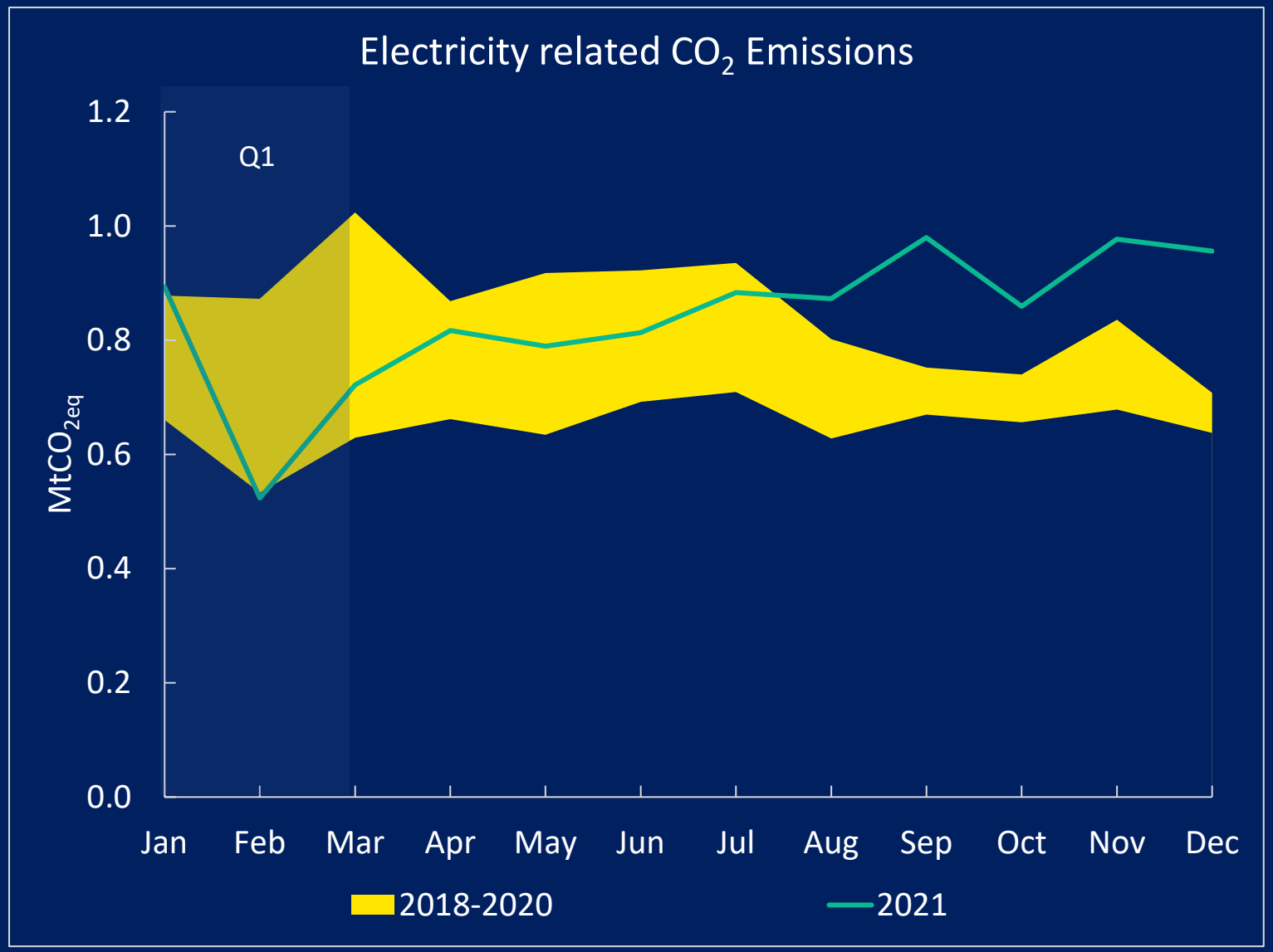


Emissions from electricity generation, heat (homes, other buildings and industry) and transport can be grouped together as Energy (accounted for half of total GHG emissions).

The graph compares energy related GHG emissions in 2021 with the period 2018-2020.

Emissions in 2021 were **8%** higher than 2020 and **3%** lower than 2018. However, if we 'correct' for COVID, i.e. remove Q1, energy related CO_2 emissions were **2% above** 2018 levels.

Taking a closer look at electricity related emissions …



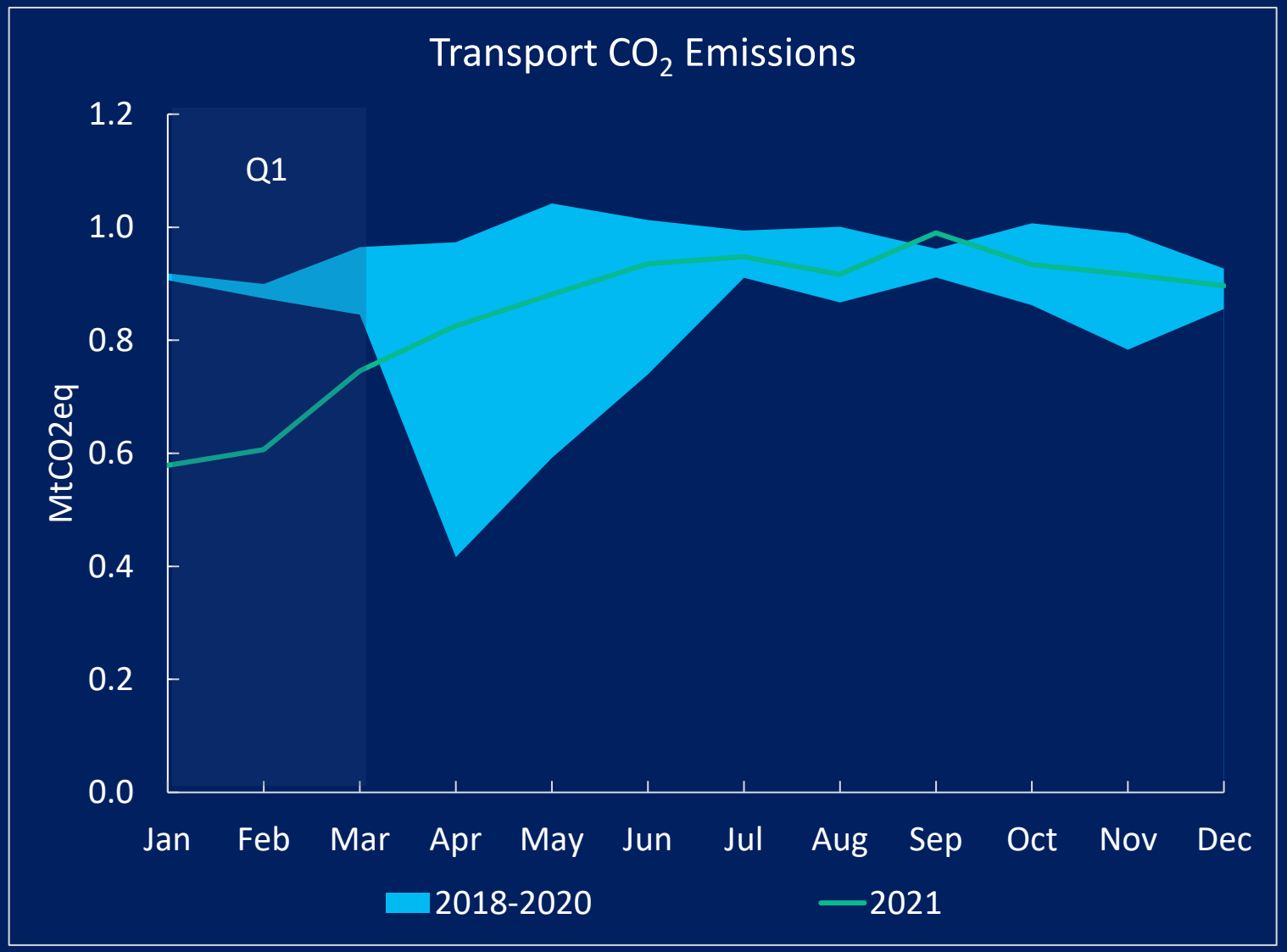
Emissions from electricity generation grew by **25%** in 2021 relative to 2020.

The impact of using coal for electricity to compensate for natural gas plants that were offline is evident.

Relatively low wind speeds in 2021 also contributed to growth in emissions, as did growth in electricity demand (with growth in data centres a key driver here).

Electricity Emissions were **1%** higher in 2021 than 2018 levels (**10%** higher if adjusted for COVID).

Taking a closer look at transport related emissions …

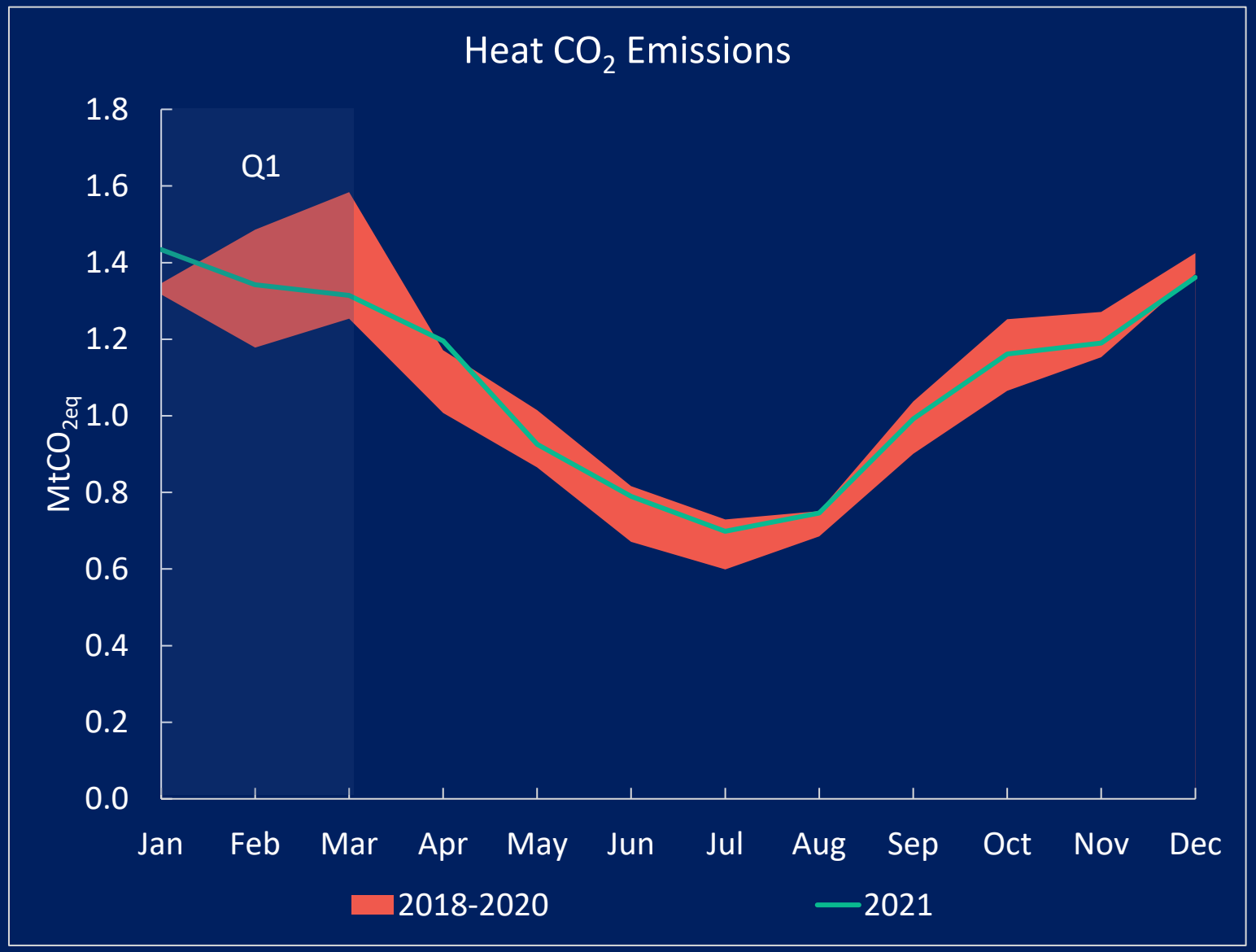


Emissions from transport generation grew by **6%** in 2021 relative to 2020 levels.

The impact of pandemic restrictions on travel in Q1 is clear from relatively low transport emissions in that period.

Transport emissions in 2021 were **12%** below 2018 levels (**6%** below if Q1 data removed to account for impact of COVID).

Taking a closer look at heat related emissions …

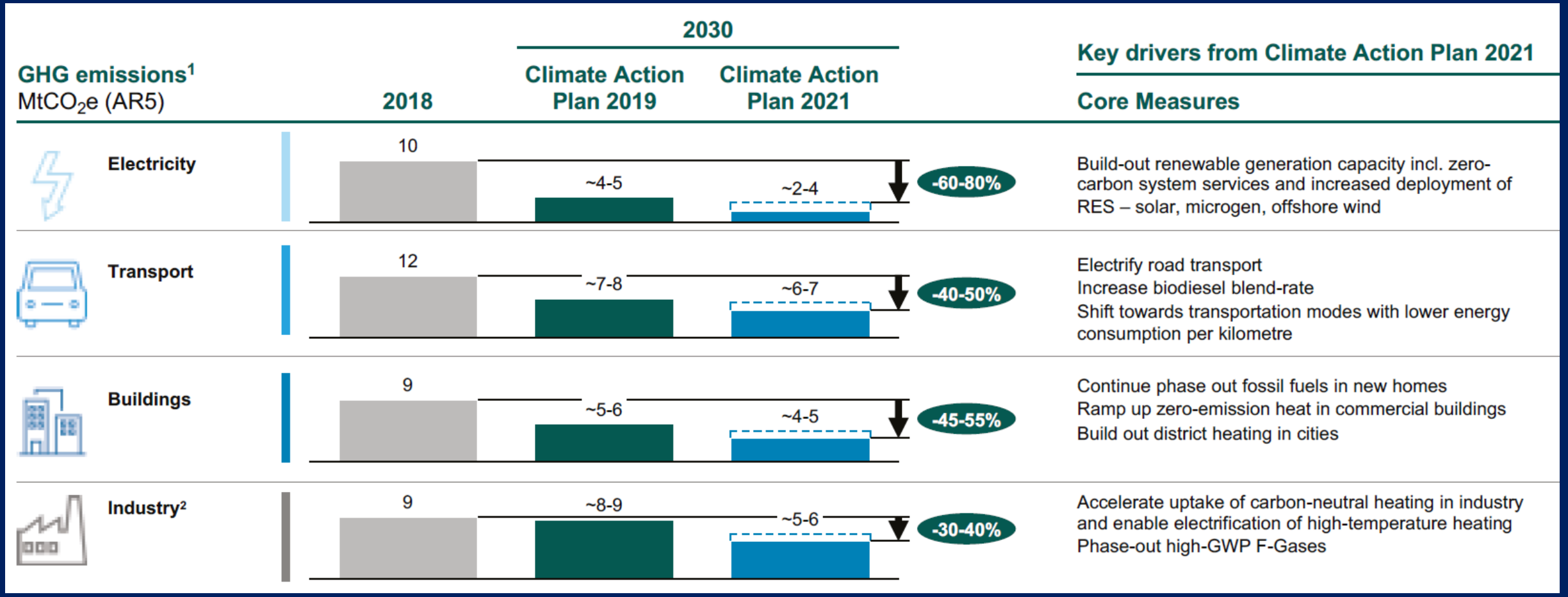


Emissions from heat (in our homes and other buildings, but also process heat used in manufacturing) reduced by **1%** in 2021 relative to 2020 levels.

Heat Emissions in 2021 were **<1%** higher than 2018 due to small increases in oil use and natural gas use for heat.

Heat emissions in 2021 were **3%** higher than 2018 if Q1 data removed to account for impact of COVID.

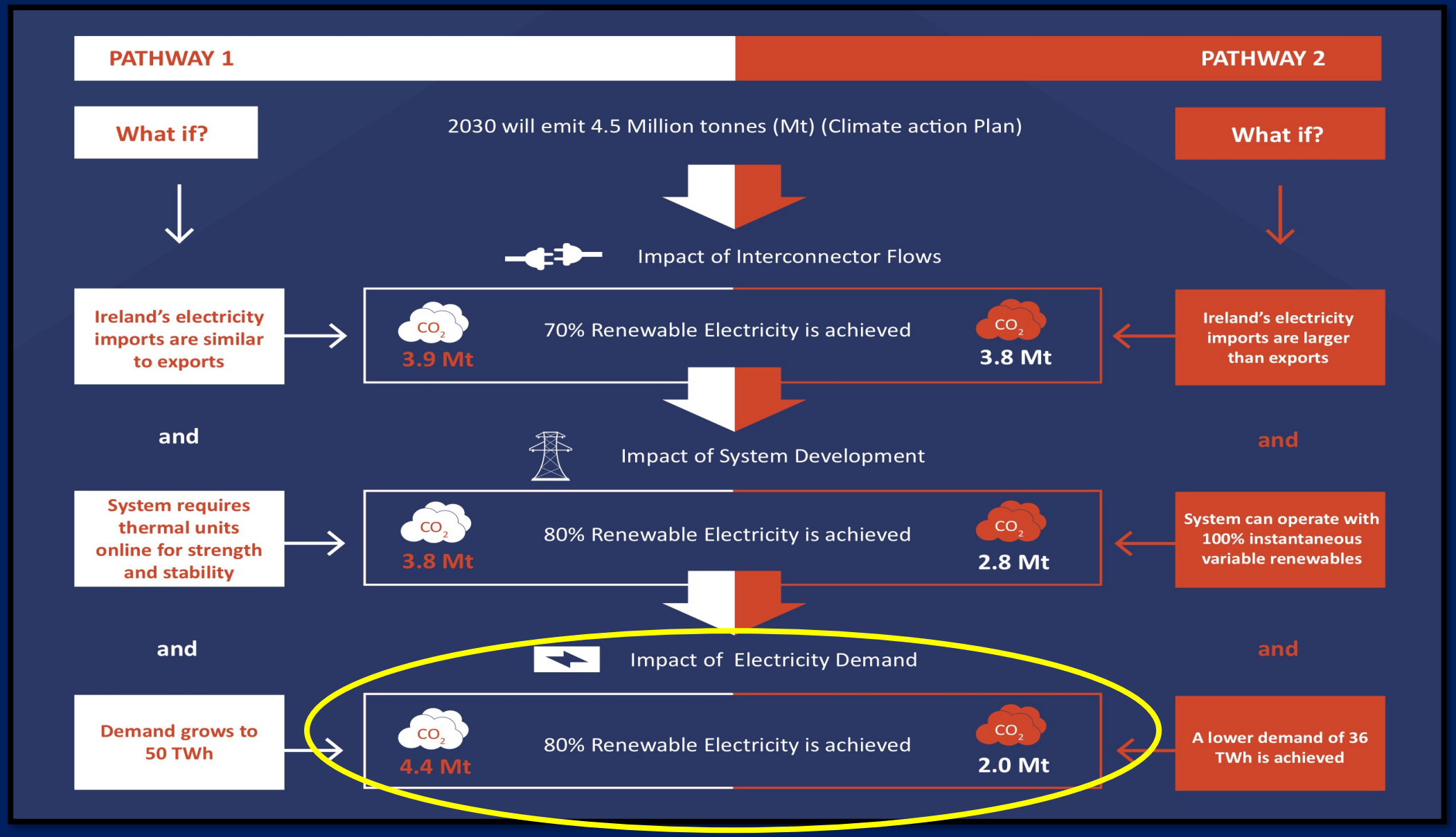
Short Term – Ratchet down fossil fuels, ramp up renewables



Comments

1. While individual targets are useful to drive change, **keep a vigilant eye on emissions**
2. **Ensure there is sufficient redundancy** so that if one measure fails, there is sufficient back-up elsewhere in the system
3. Many individual targets are **unprecedented** – see MacUidhir T., Ó Gallachóir B., Curtis J., and Rogan F. 2022 Achieving the unprecedented: modelling diffusion pathways for ambitious climate policy targets. **Energy & Climate Change** (link)

… but focus on emissions reduction



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Ireland's European Structural and Investment Funds Programmes 2014-2020
Co-funded by the Irish Government and the European Union

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