

successes, highlighting empty promises, and ensuring that racing to zero means a race to integrity rather than just intention.

## Standard setter: Sweden

Sweden enshrined a target of net zero by 2045 in law in 2017. After achieving it, Sweden's government plans to go to 'net negative emissions' – capturing more greenhouse gases than it emits.

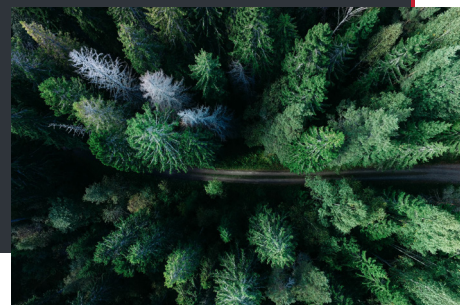
Sweden's decarbonisation journey rests on three pillars: a Climate Act, climate targets and an independent climate policy council.<sup>1</sup> The Climate Act, which aims to 'provide the long-term conditions for business and society to implement the transition', mandates the Swedish government to: (1) present an annual climate report in its Budget Bill with details of policy implementation and progress towards its targets; (2) draw up a climate policy action plan every fourth year to describe how the climate targets are to be achieved; and (3) ensure that climate policy goals and budget policy goals work in unison.

Sweden lists interim emission targets in its Climate Policy Framework: 63% lower than 1990 by 2030 and 75% lower by 2040.<sup>2</sup> These cover all greenhouse gases. Short-term policy action has also followed target-setting. In 2019, the country banned sales of fossil fuel powered cars by 2030, and the following year phased out coal power.<sup>3,4</sup>

One area that sets Sweden apart from the net zero pack is its transparency around offsetting. The only nation in our dataset that does this, Sweden's net zero framework details maximum use of offsets that can be used to meet its interim goals: 8% by 2030 and 2% by 2040. By 2045, the overarching net zero goal can only be achieved using a maximum of 15% offsets. This stands in stark contrast to Norway, its net zero neighbour, which has ambitious net zero targets but does not provide clarity around the use of its offsets.<sup>5</sup>

1 Klimatpolitiska Radet, <https://www.klimatpolitiskaradet.se/summary-in-english/>  
2 The Swedish Climate Policy Framework, Sweden's Ministry of the Environment and Energy, <https://www.government.se/information-material/2018/03/the-swedish-climate-policy-framework/>  
3 <https://www.government.se/press-releases/2019/12/inquiry-appointed-on-phasing-out-fossil-fuels-and-banning-sales-of-new-petrol-and-diesel-cars/>  
4 <https://ieefa.org/sweden-becomes-third-european-country-to-complete-coal-plant-phaseout/>  
5 'Climate neutrality the Norwegian way: Carbon trading?', <https://cicero.oslo.no/no/posts/nyheter/climate-neutrality-the-norwegian-way-carbon-trading>

Image credit: Geran de Klerk, Unsplash



## Setting the scene

In 2015, at the pivotal UN climate summit in Paris, governments pledged to 'pursue efforts' to limit global warming to 1.5 degrees Celsius, recognising that warming above this limit would have serious consequences for many societies and for nature. Although grounded in the latest climate science, the idea that halting global warming at any level necessitated reaching net zero emissions was not yet widely recognised by policymakers or the public. Nevertheless, thanks to the efforts of vulnerable nations and activists, the concept was embedded in Article 2 of the Paris Agreement, which committed nations to achieving 'a balance between sources and sinks' of greenhouse gases.

Three years later the IPCC Special Report on Global Warming of 1.5°C clarified the minimum action governments need to take in order to fulfil their pledge, in particular setting out the required timescale:

# FROM ZERO TO TWO-THIRDS



Myles Allen, Dave Frame and other scientists publish a paper highlighting that **the eventual extent of global warming is largely determined by cumulative emissions of CO<sub>2</sub>**

Damon Matthews and other scientists propose that 'cumulative carbon emissions represent an alternative framework that is applicable both as a tool for climate mitigation and for the assessment of potential climate impacts'

Article 4.1 of the Paris Agreement stipulates 'Parties aim to reach global peaking of greenhouse gas emissions as soon as possible... so as to achieve a **balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases** in the second half of this century...'



Sweden becomes the first nation to enshrine a mid-century net zero target (2045) in law

The UK becomes the first G7 economy to legislate for net zero by 2050

China, the world's largest greenhouse gas emitter, commits to **carbon neutrality 'before 2060'** at the 75th UN General Assembly

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

Susan Solomon and other scientists show that temperatures do not decline for many centuries even after a complete cessation of CO<sub>2</sub> emissions

The IPCC Fifth Assessment Report states that **limiting global temperature change means limiting the cumulative (or stock) of CO<sub>2</sub> emissions in the atmosphere**. To eventually stop global warming, net anthropogenic additions of CO<sub>2</sub> into the atmosphere have to reach zero



President of the World Bank, Jim Yong Kim, says that a proposed global climate agreement should 'provide a clear pathway to zero net emissions before 2100'

The IPCC Special Report on 1.5°C concludes that 'limiting temperature rise to around 1.5°C and preventing the worst impacts of climate change implies **reaching net zero emissions of CO<sub>2</sub> by mid-century** along with deep reductions in non-CO<sub>2</sub> emissions'



Net zero pledges cover almost one-sixth (16%) of the global economy

**Net zero pledges cover over two-thirds (68%) of the global economy**