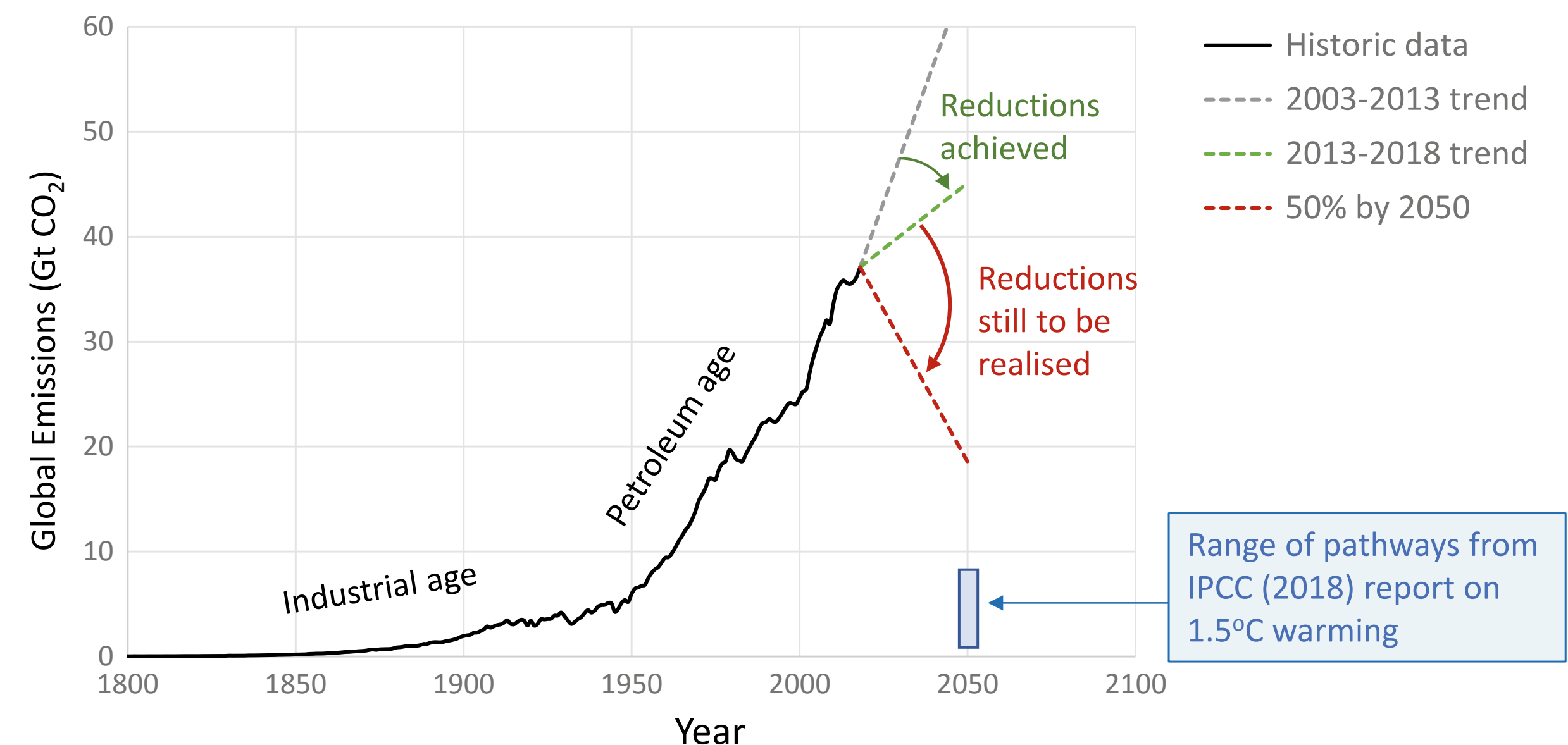


# Motivation

thanks to Philip Ringrose

# History fossil fuels

- ▶ during industrial revolution society more & more dependent on fossil fuels
- ▶ acceleration of CO<sub>2</sub> in atmosphere
- ▶ widespread agreement rapidly reduce rate of emissions
- ▶ find balance anthropogenic emission & sinks
- ▶ reduction 50% needed by 2050 to avoid warming by 1.5°C
- ▶ ‘energy transition’ towards low-carbon energy
- ▶ change behavior & adapt new technologies
- ▶ extremely complex problem



**Fig. 1.1** Historical record of global CO<sub>2</sub> emissions compared with various projections (data sources: carbon emissions data up to 2013 from <https://cdiac.ess-dive.lbl.gov/> with 2014–2018 years estimates from [www.wri.org](http://www.wri.org)). Figure modified from Stephenson et al. (2019)