

Data description for: SCC Consortium (2020) 'Maritime trade projections (2010-2050) under four climate related socio-economic development scenarios'

This data was created under the ESFRC funded 'Shipping in Changing Climates' project (EP/K039253/1), outputs from which can be found at www.lowcarbonshipping.co.uk. It contains quantified estimations of seaborne imports and exports (2010-2050) based on four future climate policy-related trade scenarios. The scenarios anticipate volumes and patterns of future international maritime trade consistent with high and low levels of global CO₂ mitigation alongside associated climate impacts and socio-economic development hypotheses. The trade scenarios cover nearly all seaborne traded commodities transported by three main vessel types (dry bulk, wet bulk, and containers) and are quantified at country and commodity levels at decadal time steps.

A detailed description of the methodology and scenario descriptions used to generate this data can be found in Walsh et al. (2019) 'Trade and trade-offs: Shipping in changing climates'. Marine Policy, 106, 18. <https://doi.org/10.1016/j.marpol.2019.103537>. Please do not use this data without reference to this paper.

File format:

The data files are in the Excel (.xlsx) format

File organisation:

The files are organised into four zipped files identified by trade scenario (see Table 1). Within each scenario folder there are three files identified by ship type (see Table 2). Each file has consistent column identifiers (see Table 3) and covers four decadal time steps (2010,2020,2030 and 2040).

Table 1. Trade scenario nomenclature with climate and socio-economic basis and simplified descriptions (full description in Walsh et al. (2019))

| Scenario name | | Underlying IPCC scenario* | | Characterised by |
|---------------|-------------------|---------------------------|---------|---|
| GR | Green Road | SSP 1 | RCP 2.6 | 2°C of global warming by 2100; sustainability is important, climate policy aims to mitigate greenhouse gas emissions, increase in the use of biofuels as fossil fuels phased out; regionalisation is strong and there is a future similar to today in terms of governance |
| MR2 | Middle Road (2°C) | SSP 2 | | |
| MR4 | Middle Road (4°C) | | RCP 8.5 | 4°C of global warming by 2100; a high-tech world dominated by fossil fuels amid expanding processes of globalisation and increased economic convergence amongst regions; low adaptive capacity and response to climate change impacts. Change in agricultural yields and distribution as temperature increase affect production |
| HR | High Road | SSP 5 | | |

* as used in the IPCC 5th Assessment report; also see O'Neill et al. (2017). The roads ahead: Narratives for shared socioeconomic pathways describing world futures in the 21st century. Global Environmental Change. <https://doi.org/10.1016/j.gloenvcha.2015.01.004> and van Vuuren et al. (2011). The Representative Concentration Pathways: an overview. Climatic Change, 109(1-2), 5-31. <https://doi.org/10.1007/s10584-011-0148-z>

Table 2.Ship type quantification

| | | |
|-----------------------|---------|--|
| Wet bulk commodities | tonnage | import and export at country and commodity level |
| Dry bulk commodities | tonnage | import and export at country level and commodity |
| Container commodities | tonnage | import and export at country level and commodity |
| | number | import and export at country and commodity level |

Table 3.Column descriptors

| | |
|------------------|--|
| t | Decadal time step |
| scenario | Trade scenario identifier |
| nstrtwodig | NST/R* code identifier |
| nstr_description | NST/R description of commodity |
| originctycode | Numerical code for country of export |
| origincty | Country of export** |
| destctycode | Numerical code for country of import |
| destcty | Country of import** |
| tonnes_cty | Quantity of commodity category in tonnes |
| teu_cty | Number of containers used for commodity category |

*Nomenclature uniforme des marchandises pour les Statistiques de Transport, Révisée (NST/R)

**ISO3-digit identifier