more different framework data and corresponding results at: http://results-espm.save-the-climate.info

| **framework data** (input values here: yellow fields) | | Gt | determination |
|---|---|---|---|
| **global CO2 budget 2020 - 2100** | | **700** | |
| land-use change (LUC) emissions 2020 - 2100 | | **0** | global |
| international shipping and aviation (ISA) emissions 2020 - 2100 | 3% | -21 | budget |
| global CO2 budget 2020 - 2100 to distribute here | | 679 | |
| **weighting population** key in the weighted key | **0%** | | national budget |
| | | | |
| scenario type used for the reference values | **RM-6-abs** | | paths |

Calculation **global budget** to distribute here:

LUC and ISA emissions are not considered here. Global LUC and ISA budgets are therefore offset against the global budget.

A value of **zero** for **LUC** means that by 2100, in total, net positive LUC emissions are offset by net negative LUC emissions.

| **reference values for the countries with the highest emissions** | | | | | emissions 2019 | per capita 2019 | share in global emissions 2019 | accu-mulated share | year emissions neutrality | normalised change rate 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| target year: | 2030 | | 2050 | | | | | | | |
| reference year: | 1990 | 2010 | 1990 | 2010 | in Gt | in t | | | | |
| China | 248% | -9% | -26% | -81% | 11.5 | 8 | 31% | 31% | 2055 | 2.2% |
| United States | -29% | -35% | -81% | -83% | 5.0 | 15 | 14% | 45% | 2057 | -2.4% |
| EU27 | -46% | -40% | -84% | -83% | 2.9 | 7 | 8% | 53% | 2058 | -4.5% |
| India | 213% | 7% | -30% | -76% | 2.6 | 2 | 7% | 60% | 2055 | 1.5% |
| Russia | -46% | -26% | -87% | -82% | 1.8 | 12 | 5% | 65% | 2056 | -0.7% |
| Japan | -30% | -34% | -81% | -82% | 1.1 | 9 | 3% | 68% | 2057 | -3.0% |

| **largest national budgets 2020 - 2100** | national budget | weighted key | emissions 2019 | scope years |
|---|---|---|---|---|
| | Gt | | Gt | |
| China | 213.9 | 31.5% | 11.50 | 19 |
| United States | 93.6 | 13.8% | 5.04 | 19 |
| EU27 | 54.5 | 8.0% | 2.93 | 19 |
| India | 47.7 | 7.0% | 2.56 | 19 |
| Russia | 33.1 | 4.9% | 1.78 | 19 |
| Japan | 21.2 | 3.1% | 1.14 | 19 |
| Germany | 13.1 | 1.9% | 0.70 | 19 |
| Iran | 12.8 | 1.9% | 0.69 | 19 |
| South Korea | 12.3 | 1.8% | 0.66 | 19 |
| Indonesia | 12.0 | 1.8% | 0.65 | 19 |
| Canada | 11.1 | 1.6% | 0.60 | 19 |
| Saudi Arabia | 11.0 | 1.6% | 0.59 | 19 |
| Mexico | 9.1 | 1.3% | 0.49 | 19 |
| Brazil | 8.9 | 1.3% | 0.48 | 19 |
| South Africa | 8.7 | 1.3% | 0.47 | 19 |
| Australia | 7.7 | 1.1% | 0.41 | 19 |
| Turkey | 7.7 | 1.1% | 0.41 | 19 |
| United Kingdom | 6.7 | 1.0% | 0.36 | 19 |
| Italy, San Marino and the Holy See | 6.2 | 0.9% | 0.33 | 19 |
| Vietnam | 6.1 | 0.9% | 0.33 | 19 |
| France and Monaco | 5.9 | 0.9% | 0.32 | 19 |
| Poland | 5.8 | 0.9% | 0.31 | 19 |
| Taiwan | 5.3 | 0.8% | 0.28 | 19 |
| Egypt | 5.2 | 0.8% | 0.28 | 19 |
| Kazakhstan | 5.1 | 0.7% | 0.27 | 19 |
| Thailand | 5.0 | 0.7% | 0.27 | 19 |
| Malaysia | 4.9 | 0.7% | 0.26 | 19 |
| Spain and Andorra | 4.8 | 0.7% | 0.26 | 19 |
| Pakistan | 4.1 | 0.6% | 0.22 | 19 |
| United Arab Emirates | 4.0 | 0.6% | 0.21 | 19 |
| Iraq | 3.8 | 0.6% | 0.21 | 19 |
| Ukraine | 3.7 | 0.5% | 0.20 | 19 |
| Argentina | 3.5 | 0.5% | 0.19 | 19 |
| Algeria | 3.3 | 0.5% | 0.18 | 19 |
| Netherlands | 2.9 | 0.4% | 0.16 | 19 |
| Philippines | 2.8 | 0.4% | 0.15 | 19 |
| Nigeria | 2.5 | 0.4% | 0.13 | 19 |
| Bangladesh | 2.0 | 0.3% | 0.11 | 19 |
| Venezuela | 2.0 | 0.3% | 0.11 | 19 |
| Qatar | 2.0 | 0.3% | 0.11 | 19 |
| Czechia | 2.0 | 0.3% | 0.11 | 19 |
| Belgium | 1.8 | 0.3% | 0.10 | 19 |
| Kuwait | 1.8 | 0.3% | 0.10 | 19 |
| Colombia | 1.7 | 0.3% | 0.09 | 19 |
| sum without EU | 629 | | 34 | |
| sum across all countries | 679 | | 37 | 19 |

**Basic idea behind the ESPM**

The ESPM consists of two steps:

(1) **National budgets**: A predefined global CO2 budget is distributed to countries. The ESPM tool offers the use of a **weighted distribution key** that includes the **'population'** and the **'emissions'** in a base year (here: 2019).

(2) **National paths**: The ESPM tool offers the Regensburg Model Scenario Types to derive plausible national paths that adhere to a national budget.

**Basic idea behind the Regensburg Model Scenario Types RM 1 - 6**

With the help of the RM Scenario Types, emission paths can be determined that meet a given budget. The scenario types differ in the **assumption** about the **property** of the **annual reductions**. This approach is particularly useful when it comes to making **political decisions** about emission **paths**.

Brief description of the ESPM:
https://www.klima-retten.info/PDF/ESPM_Background.pdf

Brief description of the RM Scenario Types:
https://www.klima-retten.info/Downloads/RM-Scenario-Types_short.pdf

Published paper for the six largest emitters:
https://doi.org/10.5281/zenodo.4764408