

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

| framework data (input values here: yellow fields) | | | determination |
|---|-----------------|-----|-----------------|
| | Gt | | |
| global CO2 budget 2020 - 2100 | 650 | | global budget |
| land-use change (LUC) emissions 2020 - 2100 | 0 | | |
| international shipping and aviation (ISA) emissions 2020 - 2100 | 3% | -20 | |
| global CO2 budget 2020 - 2100 to distribute here | | 630 | |
| weighting population key in the weighted key | 50% | | 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 | per capita | share in | share in | year | normalised |
|---|------|------|-------|-------|-----------|------------|-----------|------------|------------|------------|
| target year: | 2030 | | 2050 | | 2019 | 2019 | global | global | emissions | change |
| reference year: | 1990 | 2019 | 1990 | 2019 | in Gt | in t | emissions | population | neutrality | rate |
| China | 209% | -36% | -100% | -100% | 11.8 | 8 | 32% | 18% | 2044 | - |
| United States | -47% | -46% | -100% | -100% | 5.0 | 15 | 14% | 4% | 2042 | - |
| EU27 | -50% | -35% | -100% | -100% | 2.9 | 7 | 8% | 6% | 2050 | - |
| India | 271% | -13% | 113% | -50% | 2.6 | 2 | 7% | 18% | 2078 | - |
| Russia | -56% | -44% | -100% | -100% | 1.9 | 13 | 5% | 2% | 2041 | - |
| Japan | -41% | -40% | -100% | -100% | 1.1 | 9 | 3% | 2% | 2046 | - |
| sum | | | | | | | 69% | 50% | | |

| largest national budgets 2020 - 2100 | national | weighted | emissions | scope |
|---|----------|----------|-----------|-------|
| | budget | key | 2019 | years |
| | Gt | | Gt | |
| China | 159.1 | 25.3% | 11.77 | 14 |
| India | 78.0 | 12.4% | 2.56 | 30 |
| United States | 56.5 | 9.0% | 5.01 | 11 |
| EU27 | 43.2 | 6.9% | 2.92 | 15 |
| Russia | 22.0 | 3.5% | 1.88 | 12 |
| Indonesia | 16.6 | 2.6% | 0.65 | 26 |
| Japan | 15.0 | 2.4% | 1.14 | 13 |
| Brazil | 12.8 | 2.0% | 0.48 | 27 |
| Pakistan | 10.1 | 1.6% | 0.20 | 50 |
| Mexico | 9.5 | 1.5% | 0.48 | 20 |
| Germany | 9.4 | 1.5% | 0.70 | 13 |
| Nigeria | 9.2 | 1.5% | 0.12 | 77 |
| Iran | 9.1 | 1.5% | 0.67 | 14 |
| Bangladesh | 7.8 | 1.2% | 0.10 | 74 |
| South Korea | 7.7 | 1.2% | 0.65 | 12 |
| Turkey | 7.0 | 1.1% | 0.42 | 17 |
| Vietnam | 6.8 | 1.1% | 0.33 | 21 |
| Canada | 6.7 | 1.1% | 0.61 | 11 |
| Egypt | 6.4 | 1.0% | 0.27 | 24 |
| South Africa | 6.4 | 1.0% | 0.47 | 14 |
| Saudi Arabia | 6.4 | 1.0% | 0.58 | 11 |
| United Kingdom | 5.9 | 0.9% | 0.37 | 16 |
| Philippines | 5.7 | 0.9% | 0.15 | 38 |
| France and Monaco | 5.5 | 0.9% | 0.32 | 17 |
| Italy, San Marino and the Holy See | 5.3 | 0.8% | 0.33 | 16 |
| Thailand | 5.2 | 0.8% | 0.28 | 19 |
| Ethiopia | 4.7 | 0.7% | 0.02 | 236 |
| Australia | 4.5 | 0.7% | 0.41 | 11 |
| Poland | 4.2 | 0.7% | 0.31 | 14 |
| Spain and Andorra | 4.1 | 0.7% | 0.26 | 16 |
| Malaysia | 3.6 | 0.6% | 0.27 | 14 |
| Democratic Republic of the Congo | 3.6 | 0.6% | 0.00 | 1,061 |
| Ukraine | 3.5 | 0.6% | 0.20 | 18 |
| Argentina | 3.4 | 0.5% | 0.18 | 19 |
| Taiwan | 3.4 | 0.5% | 0.28 | 12 |
| Algeria | 3.3 | 0.5% | 0.18 | 18 |
| Iraq | 3.2 | 0.5% | 0.18 | 18 |
| Colombia | 2.8 | 0.4% | 0.08 | 33 |
| Kazakhstan | 2.7 | 0.4% | 0.22 | 12 |
| Tanzania | 2.6 | 0.4% | 0.01 | 193 |
| Myanmar/Burma | 2.6 | 0.4% | 0.04 | 66 |
| Sudan and South Sudan | 2.4 | 0.4% | 0.02 | 106 |
| Uzbekistan | 2.4 | 0.4% | 0.12 | 20 |
| Venezuela | 2.4 | 0.4% | 0.12 | 20 |
| sum without EU | 549 | | 33 | |
| sum across all countries | 630 | | 37 | 17 |

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-rettung.info/PDF/ESPM_Background.pdf

Brief description of the RM Scenario Types:

https://www.klima-rettung.info/Downloads/RM-Scenario-Types_short.pdf

Published paper for the six largest emitters:

<https://doi.org/10.5281/zenodo.4764408>